THE AMERICAN ELEVATOR AND GRAIN TRADE.

D. H. JOHNSON, DES.

A MONTHLY JOURNAL, DEVOTED TO THE ELEVATOR AND GRAIN INTERESTS.

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This space will be occupied in our next issue by **Howes, Babcock & Ewell,** of Silver Creek, N. Y., with an advertisement of their well-known Grain Cleaning Machinery. Watch for it.

H. & L. CHASE,
IMPORTERS, MANUFACTURERS AND DEALERS IN

BEST
EXPORT SACKS,
All Sizes and Grades, both Cotton and Jute.
BAGS for Grain, Wool, Flour, Coin, Meats, Seed, Salt, Ore, Etc.
Burlaps and Twines.

BAGS
OF ALL KINDS.

FLOUR BAG
PRINTING
A Specialty.
DESIGNS SENT
When Desired.
Please write to us about prices and New Brands.

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8, 10, 12 and 14 North Main Street,
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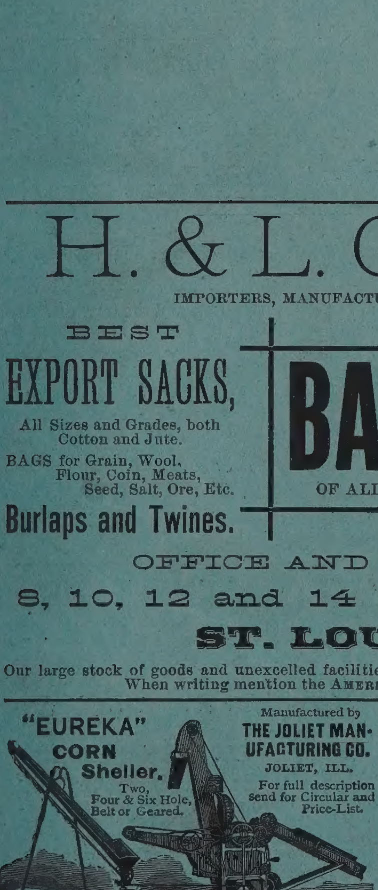
Our large stock of goods and unexcelled facilities enable us to fill orders promptly at low prices. When writing mention the AMERICAN ELEVATOR AND GRAIN TRADE.



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Two, Four & Six Hole, Belt or Geared.

Manufactured by
THE JOLIET MANUFACTURING CO.
JOLIET, ILL.
For full description send for Circular and Price-List.

This is the only Sheller that *Self Feeder* carries the Corn direct into *Feed Hopper*, which has a *positive Cylinder Force Feed*, that entirely prevents clogging.

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MANUFACTURERS OF

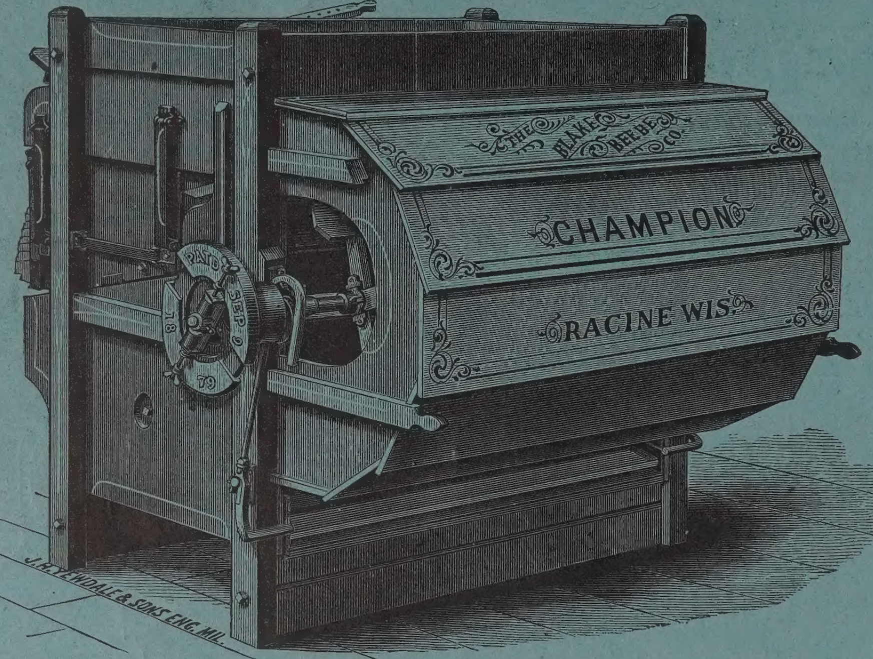
(Different Sizes Built.)

Kurth's Patent Improved Cockle Separator.
Combines Large Capacity with Good Quality of Work,
ESPECIALLY ADAPTED FOR ELEVATORS AND WAREHOUSES.
——Also built in combination with——
Richardson's Dustless Oat Separator.
ALSO MANUFACTURERS OF
Beardslee's Patent Grain Cleaner,
Which will clean the wheat to suit any purpose for Elevators or Warehouses.
LOW PRICES FOR EXCELLENT MACHINES.
Address us for Illustrated Catalogue and Circulars.
Manufacturers of Perforated Metals for all purposes. Sold at Lowest Prices.

WAREHOUSE FANNING MILLS.

Cut of No. 6 Mill with Motion Governor.

Capacity, 600 Bushels per Hour.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CHAMPION
RACINE WIS.
J. H. YEWDALE & SONS ENG. MIL.

We make Seven Different Sizes for Warehouses and Elevators.

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THE BLAKE-BEEBE CO., Racine, Wis.

KERFOOT BROS.,

Des Moines, Iowa,

General Mill Furnishers

—AND—

ELEVATOR SUPPLIES.

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Full line of **Caldwell Conveyors** in stock, also **Elevator Buckets**, from 2-inch to 14-inch, and **Elevator Bolts.** A complete stock on hand of

Leather, Rubber and Cotton Belting, Wire Cloths, Corn Shellers, Portable Mills, Etc., Etc.,

and of such sundries as are generally used in Elevators and Mills, to fill orders at a moment's notice. **Send for Circular.**

Superior to all Others for Service and Economy.

Twice as Strong as Leather.

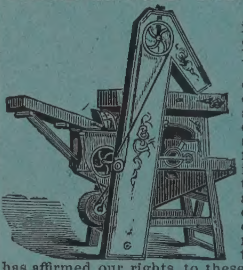
ANY LENGTH.

Send for Reduced List and Discounts. Over 2,000,000 feet sold during 1881.

NORDYKE & MARMON CO.,

Indianapolis, Ind.

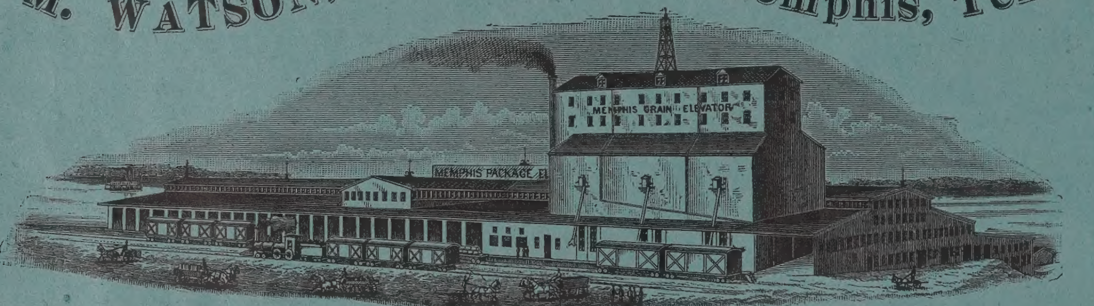
CHALLENGE FEED MILL.



Over 15.000 in use. They do not Clog or Heat.

Grinds 60 bushels per hour. No other mill will do an equal amount of work with the same power. All feed mills of similar construction to the Challenge are infringements of the patents owned by us. A recent decision of the U. S. Court has affirmed our rights to these patents, and we caution all parties against buying Feed Mills that infringe on said Patents. For descriptive circular of Feed Mills, Wind Mills, Corn Shellers, Feed Cutters, Horse-Powers, Wood-Saws, Steamers, Pumps, etc., address CHALLENGE WINDMILL AND FEED MILL CO., Batavia, Ill.

WM. WATSON, Memphis, Tenn.



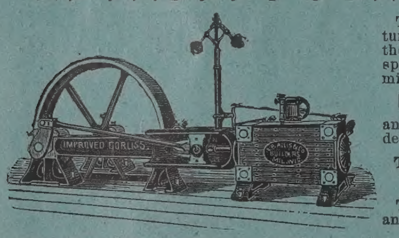
Grain and Package Elevator Builder.

RELIANCE WORKS,

EDW. P. ALLIS & CO. Props., Milwaukee, Wis.

SOLE MANUFACTURERS OF THE

REYNOLDS-CORLISS ENGINE.



This engine is especially designed for manufacturing purposes, being strong, serviceable, and of the best material and workmanship. Its even speed makes it specially desirable for flouring mills and elevators

Over 250 of these Engines are Now in Use,

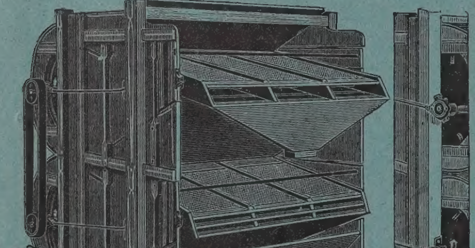
and references can be given. These engines have developed in expert trial and every day work

The Highest Economy Known in Steam Engineering.

They will save in fuel from 33 to 60 per cent. over any ordinary engine.

We also manufacture **Reynolds' Patent Air Pump and Condenser,** which can be used with our make of engine and effect a saving of about 25 per cent. Also **Reynolds' Patent Feed Water Heater and Purifier.** Send for catalogue and prices to

EDW. P. ALLIS & CO., Milwaukee, Wis.



Double "End Shake" warehouse and elevator mill. Made in three sizes. Capacity from 400 to 600 bushels per hour.

No other Mill Like, or Equal to it in the World.

Racine Agricultural Foundry & Machine Works.

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FANNING MILLS

AND SEPARATORS.

Both **single** and **double** and with either "*side shake*" or "*end shake.*" Made in *fifteen sizes.* Mills of any capacity from 60 to 600 bushels per hour.

These mills are **guaranteed to be superior in all respects to any other manufactured in America.** Prices made right.

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Address, **DICKEY & PEASE,** Mnfs.

Racine, Wis.

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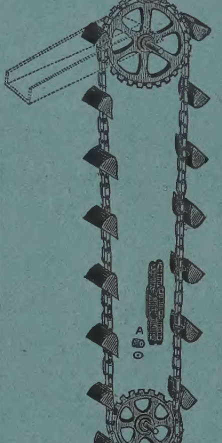

Anti-Friction Roller Detachable Chain Belting

FOR TRANSMITTING POWER.

The only medium by which so nearly all the power applied is transmitted. The special feature about this chain, and which makes it superior to other chains for similar purposes, is the ***Friction Roller*** on the rivet, which takes off all friction from the sprocket, and nearly all from the rivet, and admitting of almost any desired speed.

ESPECIALLY ADAPTED

For Elevators, Drags, Carriers, Driving Heavy and Light Shafting, etc.

Send for Circulars. Manufactured and sold by the

LECHNER MANUFACTURING CO.,

COLUMBUS, OHIO.

Also Manufacturers of the Lechner Coal-Mining Machines.

HARRIS-CORLISS ENGINE.

—BUILT BY—

WM. A. HARRIS, Providence, R. I.

Built under the original patents until their expiration. Improvements since added, "STOP MOTION ON REGULATOR," prevents engine running away; "SELF-PACKING VALVE STEMS," (two patents) dispenses with four stuffing boxes; "RECESSED VALVE SEATS," prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines. "BABBITT & HARRIS PISTON PACKING," (two patents.) "DRIP-COLLECTING DEVICES," (one patent.) Also in "General Construction" and "Superior Workmanship."

The Best and most workmanlike form of the Corliss Engine now in the market, substantially built, of the best materials, and in both condensing and non-condensing forms.

The Condensing Engine will save from 25 to 33 per cent. of fuel, or add a like amount to the power, and consuming no more fuel. Small parts are made in quantities, and inter-changeable, and kept in stock for the convenience of repairs, and to be placed on new work ordered at short notice.

No other engine builder has authority to state that he can furnish this engine.

The only works where this engine can be obtained are at Providence, R. I., no outside parties being licensed.

WM. A. HARRIS, Prop'r.

O.H. JOHNSON. DES.

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SUBSCRIPTION PRICE,
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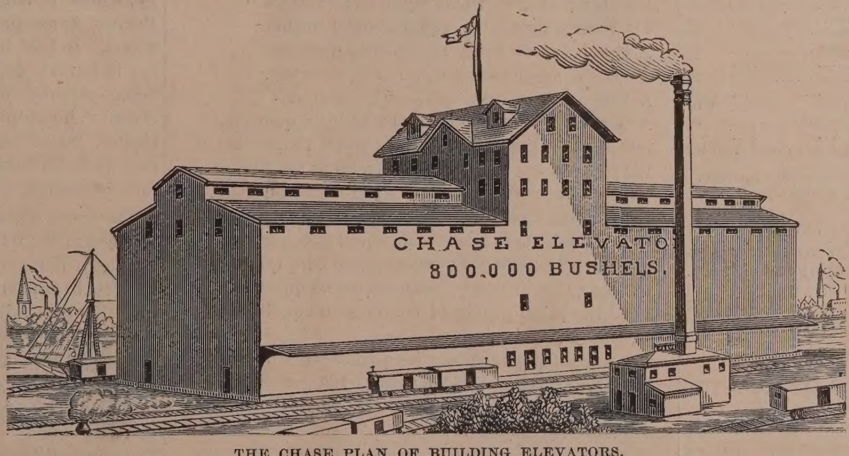
THE CHASE PLAN OF BUILDING ELEVATORS.

The basis of our national prosperity is agriculture. The value of the annual grain crop is counted by hundreds of millions, and among all other business interests that of grain stands out prominently. It might well be called the most important of all, since upon it so many business interests depend. A short grain crop produces a general lack of activity in all branches of trade. There is not an industry which is not affected by the depression felt from a short crop; while an abundant harvest insures a year of universal prosperity. One of our greatest interests, the railroads, depends largely upon grain for their freight business. By actual examination of some of the reports, we find that grain is between 50 and 60 per cent of the freight carried by many of the roads. Great as the grain interest is, it is still in its infancy. The annual grain crop is many million bushels, and to double or quadruple this production we need but the territory and the people. We have the territory, as yet comparatively uncultivated. To be assured that we will not lack for tillers of the soil, one has but to glance at the reports of immigrants daily arriving. Fully three-fourths of these turn toward our uncultivated territory, and the second or third year after their arrival become producers.



THE CHASE PLAN OF BUILDING ELEVATORS.

To move the immense bulk of grain to the seaboard in the most rapid and economical manner, is a consideration which has for years occupied the attention of railroad companies and shippers, and out of the very necessity of the case has grown up a system of handling, storing and transferring grain which stands unparallelled as a commercial enterprise. Already has been accomplished rapidity, ease and convenience in handling grain, and the point now occupying the attention of grain men is *economy*. Sharp competition demands lower rates for storing and transferring grain. In the past the charges have been high. One cause of this has been the monopoly of the business by a few. The charges in the past have been high enough to pay large dividends on extravagant grain houses, and the terminal charges on grain are out of proportion with charges for transportation. Grain always tends towards those points where it can be cheaply stored, and a reduction in terminal charges means an increase of business for the road. In one notable instance, an important road, running into New York, has lately reduced the terminal charges on grain, the road paying a part of the charge made by the elevator owners. The large increase of business makes this policy a good one for the road.

The great cost of the ordinary grain elevator makes it impossible to reduce the terminal charges on handling grain below a certain figure; and the only solution of the difficulty is to build less costly grain houses. Many plans have been devised, one of the best among which is the "Chase Plan." Although this plan of building is less costly than the old style elevator, the houses are not cheap in the ordinary acceptation of the term; they are strong, durable and substantial.

The distinctive feature of this plan of elevator is the peculiar construction of the bins. These are built of studding and boards, and are securely tied with iron rods. The rods extending both ways, make the bin much stronger than one built of crib work. The strength is in the iron rods, not in the frame work of the bin. There is an elasticity about a bin constructed in this way which makes it peculiarly adapted to holding bulk grain. The timbers all standing on end, there is no perceptible shrinkage in the bin after it is built. The grain is carried to and from the bins by special grain conveyors. The store house stands directly on the ground, or just high enough above the ground to secure a free passage of air beneath it. The bins are 16 or 18 feet square, and vary in height from 20 feet to 100 feet.

Another noticeable feature in the Chase Plan is that the building containing the machinery is isolated from the storehouse, and in many cases the two buildings are separated by a fire-proof wall. There is an evident advantage in having the machinery in a building separate from the grain, as the settling of the grain is liable to get the machinery out of line. The machinery posts resting on their own foundation, the machinery is not affected by any jar in the building caused by the moving of grain through the transfer house. In this transfer or machinery house, the grain is elevated to a height of 90 or 100 feet, in the ordinary way, by belt and buckets. It is then weighed by the hopper scale in the tower, and distributed to the storage bins by conveyors. If the grain is designed for immediate shipment, it is spouted from the weigh-hopper to shipping bins or cars. The building containing the machinery, scales and cleaners, may be at one end of the house or in the center. We give on this page a cut of one style in which the transfer house is in the center, and the bins on either side. If the house is designed for storage purposes mainly, this is the better and more economical plan. If the house is for rapid handling of grain, more track room is available if the machinery house is at one end and tracks are laid between machinery house and store house.

A new improvement, peculiar to this plan of elevator, is a device for cooling grain to keep it in condition. A large blast fan is placed in the upper story of the machinery house, and as the grain falls into the weigh-hopper a powerful blast strikes it, cooling it perceptibly. This fan does not in any way take the place of grain cleaners, and the weight of the grain is not diminished by the process. In the Southern states, where grain in store is liable to be affected by the climate, this improvement is found specially valuable.

The Chase plan of building, it is claimed, requires less lumber, less foundation material and less labor in building than the old style elevator, consequently there is a great saving in cost of construction. There is also a great economy of power; the grain is elevated only one half the distance it is ordinarily elevated in a grain elevator, therefore only one-half the power is required. But the great saving is in the cost of operating the house. All the work is done on the ground floor, and a comparatively small working force is required to run the house. Every improvement in building which dispenses with one or more workmen in the elevator, is an improvement of real value.

The introduction of less costly grain houses has been the means of dividing the elevator business among a greater number. Fifteen or twenty years ago only the large capitalist could make the investment, a grain elevator costing from a quarter of a million to one or two million dollars. At the present time, a house to do the

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same business can be built at a cost of from fifty thousand to two or three hundred thousand dollars. Gradually the elevator business is undergoing a revolution, a greater number engaging in it, and the distribution of the interest is working a desirable change. A check on the monopoly of any business is much to be desired, and all grain men are interested in any improvement which will bring the business of handling grain within the reach of a great number.

The Chase plan of elevator has been adopted by several railroads. The Union Pacific road has a 1,000,000 bushel house at Omaha; the Chicago and Ohio a 400,000 bushel house at Richmond, Va.; the Georgia Central Railroad one of 300,000 bushels at Augusta, Ga., and the Central Railroad and Banking Co. one of 300,000 bushels at Savannah. There are between one hundred and one hundred and fifty elevators on this plan in operation in the United States and Canada.

THE STANDARD ELEVATOR FROM AN INSURANCE VIEW.

The Western Manufacturers' Mutual Insurance Co., of this city, thus describes the requisites of a standard elevator with the charges for deficiencies therein:

STANDARD STEAM POWER ELEVATOR.

Standard Elevator. Sides and Cupola, brick, iron or slate clad, roof metal, slate or composition, elevator heads and pulleys entirely of iron, and so constructed that refuse does not accumulate on cross board under pulleys.

Boiler House. Brick or stone; metal, slate or composition roof; brick stack, or iron stack on brick base rising five feet or more above roof of boiler house. No communication with elevator except protected by standard fire proof doors. No cleaning or grading machinery. No grinding. No grain dryers. Force pump and hose for fire purposes outside of buildings or in fireproof boiler house.

Annual basis rate on each $100 of insurance	$1 75
Add for	
Sides and Cupola not covered with brick, iron or slate	25
Shingle roof, laid in cement, or painted with at least two coats of fire-proof paint	20
Shingle roof, ordinary	30
Elevator heads not standard	20
Boiler house, brick-lined, or iron on wood frame (no wood siding)	40
Boiler house, frame or veneered	75
Openings between elevator and brick or brick-lined boiler house not protected by standard fire-proof doors	25
Boiler house roof, wood, covered with metal, slate or composition; or shingle laid in cement, or painted with at least two coats of good fire-proof paint	15
Boiler house roof, shingle ordinary	25
Metal stack, well protected passing through roof	50
No force pump or protection from fire department	20
No sprinkler on wood roof	20
Separators and graders and cockle machines	10
Smut machines	20
Corn sheller	30
Feed mill	1 00
Grain dryer, steam heat, safely arranged, not less than	50
Grain dryer, fire heat uninsurable	

No charge for metal stack where no wood is used in roof of boiler house or when entirely outside of building.

Metal stack on brick base, substantial, and base rising five feet or more above roof of boiler house, to be rated as brick stack; if less than five feet or on insufficient base, as metal.

HORSE AND WATER POWER ELEVATORS.

Brick, slate or iron-clad, with metal, slate or composition roof. No exposures. No cleaning machinery. Everything first-class.

Annual basis rate on each $100 insurance 1 00

Add for deficiencies same as steam elevators.

LIVERPOOL AND THE PRICE OF GRAIN.

Does Liverpool determine the price of wheat in this country? (1) Yes. (2) No. (3) To some extent. Either one of these answers would be about as true as the others. There are times when the price of wheat in Liverpool seems to be the chief regulator of prices in America, and other times when the markets here move up or down with little reference to the views of buyers on the other side of the Atlantic. It would probably be more correct to say that the price of wheat in Chicago determines the price in Liverpool than to assert that Chicago quotations are determined by those of Liverpool or London. And this is none the less a fact although Chicago prices are seldom mentioned in the British markets. People there will quote New York prices in dollars and cents per ton, which they obtain by public telegraph, and then tell you the number of shillings and pence per quarter that Chicago wheat costs laid down on British shores. The latter information they obtain "privately" —that is, in the shape of offers from firms here to supply wheat to firms there at a price named. The figures last referred to are those which govern their actions; the former are the foundation for their talk about American prices.

FOREIGN WEIGHTS AND MEASURES OF GRAIN.

The commercial relations between this country and the various nations of Europe are now so intimate, that it is a matter of importance that the weights and measures in use by the different peoples be well understood. We therefore condense from authentic sources, a large number of standard terms, used especially in the handling of grain. In Great Britain the "quarter" is most frequently used in all market quotations. Now, a quarter is a somewhat variable quantity when applied to productions from different nations. For example, in cost, freight and insurance business:

A quarter of California wheat weighs 500 pounds.

A quarter of other American wheat weighs 480 pounds.

A quarter of Chilian wheat weighs 480 pounds.

A quarter of American maize weighs 480 pounds.

A quarter of Danubian maize weighs 480 pounds.

A quarter of Odessa maize weighs 492 pounds.

A quarter of Galatz maize weighs 492 pounds.

A quarter of barley weighs 400 pounds.

A quarter of oats varies from 304 pounds to 336 pounds.

A quarter of rye weighs 480 pounds.

A quarter of beans weighs 480 pounds.

A quarter of peas weighs 504 pounds.

A quarter of lentils weighs 504 pounds.

A quarter of Danubian wheat weighs 480 pounds.

A quarter of South Russian wheat weighs 492 pounds.

In Great Britain, also, American produce is sometimes sold by the bushel at the following weights:

Wheat, beans and clover seed, 60 pounds per bushel.

Maize, rye and flax seed, 56 pounds per bushel.

Buckwheat, 42 pounds per bushel.

Barley, 48 pounds per bushel.

Oats, 35 pounds per bushel.

Timothy seed, 45 pounds per bushel.

Then again:

A sack of flour weighs 280 pounds.

A barrel of flour weighs 196 pounds.

A barrel of pork weighs 200 pounds.

A barrel of rice weighs 600 pounds.

A barrel of powder weighs 25 pounds.

A firkin of butter weighs 56 pounds.

A tub of butter weighs 84 pounds.

1,015 French kilogrammes equal 1 ton.

816 Constantinople kilos equal 100 quarters.

100 Galatz kilos equal 143 quarters.

100 Ibrail kilos of wheat equal 232 quarters.

2¼ French hectolitres equal about 1 bushel.

A Dutch last of wheat equals 10½ quarters.

A Dutch last of barley equals 10½ quarters.

A Dutch last of oats equals 10¼ quarters.

A German last of wheat equals 13 to 14 quarters.

100 Russian chetwerts of wheat equal 72 quarters.

100 Russian chetwerts of seed equal 83 quarters.

100 Russian chetwerts of barley equal 88 quarters.

100 Russian chetwerts of rye equal 74 quarters.

100 Russian chetwerts of oats equal about 68 quarters.

100 Egyptian ardebs of wheat equal 62½ quarters.

100 Egyptian ardebs of beans equal 65 quarters.

1,000 Egyptian ardebs of cotton seed equal about 115 tons.

5 Spanish fanegas of wheat equal about 1 quarter.

5 Chilian fanegas of wheat equal 160 pounds.

1 maund of Indian wheat and feed equal 80 pounds.

350 Austrian stajas of wheat equal 100 quarters.

25 Portuguese alqueire of wheat equal 1¼ quarters.

Barcelona cras of wheat equals 1,925 bushels.

10 Norway maas—1 maller—4,126 bushels.

12 German sheffein—1 maller—18,145 bushels.

1 Vienna metzen equals 1.7 bushels.

472.81 Vienna metzen equal 100 quarters.

2,032 pounds German equal 2,240 pounds English.

A French quintal equals 100 kilos—220¼ pounds.

180 French charges equal 100 quarters.

217 68 French kilogrammes equal 480 pounds.

225 French kilogrammes equal 496 pounds.

To reduce any number of our bushels of Indian corn to English quarters of 480 pounds, multiply by 7 and divide by 60. To reduce cwts. of flour to barrels of 196 pounds, multiply by 4 and divide by 7.

An agricultural exchange says: "The day is not distant when, in addition to being made free, the Erie Canal must be deepened and otherwise improved. The farmer's prosperity depends upon his facility for freighting farm produce to the market at the minimum cost."

Foreign Notes.

The wheat crop in Hungary this year promises well.

Four-fifths of the wheat raised in England is sown in Autumn, from Oct. 15 to Dec. 10.

An immense elevator of solid masonry and iron has been erected at Rosario, on the Parana River. Argentine Confederation, South America.

The Archbishop of Canterbury has written to the clergy recommending the use of the special form of prayer, as the harvest prospects are causing anxiety in some parts of Great Britain.

If India was possessed of such internal transportation facilities as await the grain crops of America, the primitive and expensive methods of collecting wheat by country carts and river boats would be abandoned, and Northern India become a more formidable rival in supplying bread to European millions.

The port of Bordeaux, France, is to be provided with floating elevators, similar to those of Faon and Marseilles, for unloading grain. The machinery is operated by an electric motor. During the night the apparatus is used for producing a powerful illumination of the harbor, supplying the place of a light house.

The government returns of the crop in Prussia in 1881 state that the winter wheat crop amounted to 5,500,000 qrs.; rye, 23,000,000 qrs; barley, 5,500,000 qrs., and potatoes to the enormous total of 24,000,000 tons. An average crop of wheat is estimated to be 6,250,000 qrs.; rye, 25,000,000 qrs.; barley, 5,500,000 qrs., and potatoes 20,00,000 tons. The average yield of wheat was 23 bushels per acre; rye, 19 bushels, and barley 23 bushels.

The St. Petersburg official papers state that the exports of wheat from Russia in 1881 amounted to 47,300,000 bushels, against 35,300,000 bushels in 1880. In the first six months of the year the falling off was more than 50 per cent. on the previous year, but in the second six the large increase was soon perceptible. The Black Sea ports and Archangel are said to be satisfied with the volume of the trade, but at the Baltic ports, Libau, Reval, St. Petersburg and Constadt, there has been a decline.

On the occasion of the late Buenos Ayres Exhibition the official agricultural *Boletin*, of the Argentine Republic, furnishes the following statistics relating to the progress of wheat production in that country. Santa Fe, which is admirably situated for shipping grain to Buenos Ayres, produced in 1862 only 56,240 bushels of wheat. In 1881 it produced 2,959,945 bushels, aggregating in its sale $4,262,319, in gold. Santa Fe wheat is being exported to Europe, and is received there with favor. This province, together with San Juan, Corrientes, Salter and Tucuman, alone harvest wheat enough to feed the republic, and have a small surplus for exportation.

The great wheat exporters of Russia are becoming alarmed at the tremendous competition they have to encounter. Hungary and the Danubian principalities were the first to appear in the Western markets, but the construction of a railway to Odessa restored the equilibrium. Then the American competition commenced, and has ruined the inhabitants of the wheat-producing districts of the Muscovite Empire. Wheat is abundant in the interior—more so than for many years past—but there is scarcely any communication with the seaboard. The great military railways run right through the country, but there are but few feeding lines. The roads and canals, and the care of the wheat in transport, are in as primitive state as when Russia had no competitor in the field. If a prompt move is not made by the government—which is scarcely to be expected at present—Russian wheat will soon be driven out of the Western markets by United States enterprise and the new field opening up in India.

The Chicago, Milwaukee & St. Paul Elevator, at Sioux City, Iowa, was burned on the morning of June 7, with 21,000 bushels of corn and 2,000 bushels of oats. The loss on the elevator was $11,000: insured for $5,000. The grain was insured for $11,000.

The Nashville Elevator & Warehouse Co., at Nashville, Tenn., have a large and extensive warehouse in which is stored at all times $1,000,000 worth of goods. They receive annually at the warehouse, 40,000 bales of cotton, and have at present in warehouse and elevator 700,000 bushels of grain.

THE LECHNER ANTI-FRICTION ROLLER DETACHABLE CHAIN BELTING.

The use of chain belting for transmitting power is increasing day by day. It is no longer a novelty; but its successive application to a wide range of purposes including the transmission of power under almost all conceivable conditions, and particularly its application to carrying and elevating material in elevators and all sorts of mills and similar establishments, has demonstrated both its economy and practicability. While chain belting cannot be "crossed" as can leather or rubber, neither does it slip, by which so much power is lost in transmitting through ordinary belting, and the travel of the chain belt over the sprocket-wheel is uniform and positive, considerations which are of the greatest importance when circumstances require a positive and regular motion in machinery.

The Lechner Manufacturing Co., of Columbus, Ohio, have recently introduced a Detachable Roller Chain for which many advantages are claimed. The accompanying illustrations show the chain in both steel and iron. The malleable only is detachable. The peculiar feature of this chain and the one on which the manufacturers rest their principal claims, is the roller on the rivet shown on Fig. 3, which takes off almost all friction, at the same time causing the links always to drop over the sprocket, also without friction, and without wear upon the sprockets or ends of links. It is now driving heavy shafting in machine shops, with, it is claimed, one-fourth less steam applied than when driven by leather belting. The reason given is that it runs just as easy, is not required to be kept so tight, and never slips as is the case with leather or rubber belting. The chain is especially adapted for driving heavy or light shafting, traction engines, agricultural machinery, elevating and carrying machinery in flour mills and grain elevators, dredging machines, lifting cranes, roll trains in rolling and rail mills, elevating nut, slack and pea coal, saw-dust and tan bark carriers, side and stern wheel steamboats, and scores of applications to all sorts of machinery, which will readily occur to the reader. The manufacturers are the Lechner Manufacturing Co., of Columbus, Ohio, who will be pleased to send circulars and any desired information to interested parties.

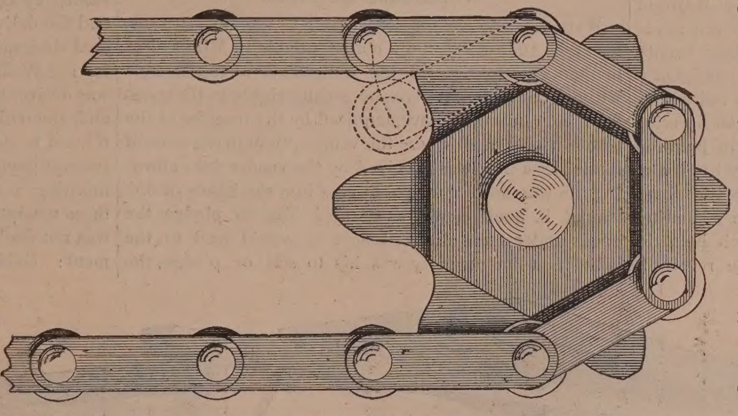


FIG. 1—THE LECHNER ANTI-FRICTION ROLLER DETACHABLE CHAIN BELT.

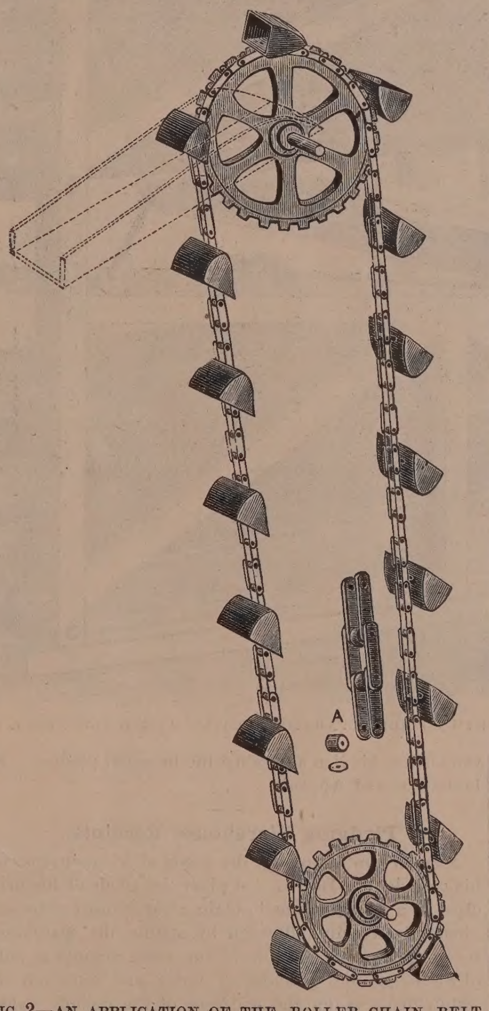


FIG 2—AN APPLICATION OF THE ROLLER CHAIN BELT.

A NEW GRAIN BIN.

Edward Annan, residing in Brooklyn, N. Y., has devised a means, by the employment of which the heating of wheat in the bins of elevators, he thinks, will be rendered impossible. Not only is the heating of the wheat to be prevented, but he expects to protect the mass of grain from other destructive agencies, and to destroy the germs of insects and mold, if any exist. His idea is to produce large quantities of intensely cold air by a well-known method—that of compressing ordinary air so as to develop latent heat therein, and conducting such compressed air at a high temperature through a pipe or pipes surrounded by cold water. The heat developed by the compression being conveyed away by the water, reduces the compressed air to near the ordinary temperature. When at a later period that compressed air so cooled is allowed to expand, the absence of the heat originally possessed is made apparent by the assumption of a very low temperature, so he proposes to make the grain bins absolutely air-tight, and to provide them with a series of openings, extending with a downward angle from the outside to the inside of the bins. Grain will not flow upward through small passages. In the use of the apparatus the grain descending from above partially fills these inclined apertures, but does not flow out through them.

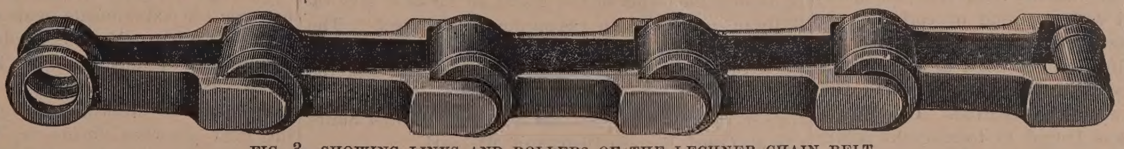


FIG. 3—SHOWING LINKS AND ROLLERS OF THE LECHNER CHAIN BELT.

It is not proposed to admit the air while the grain is flowing out. It is not probable that the air will percolate upward through the interstices in the grain with sufficient rapidity to produce the desired effect when the grain is descending. But when the grain is held at rest by the closing of a valve, a supply of intensely cold air, under a pressure but little above that of the atmosphere, being introduced from a suitable nozzle from below, flows in and percolates and rises through the grain, and in a short time appears at the top of the mass of grain in the bin. A suitable opening to allow the discharge of the air previously contained in the bin is provided, and it should be kept open until the cold air traversing up through the grain and escaping at the top has lowered the temperature of the entire mass to a sufficient degree. Then the supply of cold air at the bottom may be stopped, and attention may be turned to another bin.

Carbonic acid, or other gas, fatal to animal life, may be generated by artificial or suitable means, introduced through a nozzle and caused to enter the grain through the inclined apertures before referred to, and fill the interstices in the grain in the bin. Animal life may be destroyed by that means even at the ordinary temperatures. Such gas may be made under high pressure or compressed by pumping, or otherwise, to a high pressure and expanded, thereby producing cold and lowering the temperature of the mass, in the same manner as has been already explained for air. The thickness of the walls of the grain discharge passage may be increased, and the inclination of the apertures therein may be varied at will. For the air-tight lining of the bins, rubber alone, of proper thickness, may be used, or a good quality of impervious paper in two or more thicknesses alone. It is proposed, in some cases, from considerations of economy, to employ paper alone, in two or more thicknesses for a lining.—*Ex.*

THE ELEVATORS OF ST. LOUIS.

The anticipation of a heavy grain crop in the country tributary to St. Louis, says the *Globe-Democrat*, of that city, is leading the elevator and warehouse companies to enlarge their capacity so as to avoid the possibility of any glut in receipts or railroad blockades for want of adequate storage room. Last year, with a light harvest, the elevators were overcrowded, and shippers received no satisfaction for forwarding their consignments to this market, as they were subjected to delays and expenses that would have driven them elsewhere had not local prices ruled higher than at any other distributing center in the East or West. An ordinary crop would have sent to East St. Louis railroad termini double the amount of stuff handled last year, and the blockade would have involved thousands of cars, and worked a damage to the city's interests beside which the actual annoyance of last year would have been a trivial circumstance. To prepare for any trade exigency the belt railroads have been perfecting their equipment, laying new sidings, completing strong dikes, and constructing trestles over the sloughs, so as to make a double track system in the locality where the traffic concentrates. The vicinity of the elevators has been attended to, and better track facilities furnished to expedite the transfer of cars to and from the elevating spouts. The Chicago, Burlington & Quincy Railroad elevator has doubled its capacity by the erection of a 150,000-bushel addition. The Advance storage room has been increased by the erection of an annex, Elevator B, that can contain 600,000 bushels. Gould's elevator, at Carondelet, the erection of which was interfered with by the high stage of the river, is once more occupied by workmen. The solid stone foundations rising out of the river bed having been completed, the superstructure is ascending with wonderful speed, and before August, bins will be ready for 750,000 bushels of grain. The mammoth elevator for which ground has been purchased at Mound Street, will probably be ready for business at the same time, with storage room for 1,500,000 bushels. The Union Depot Elevator, on the line of the Missouri Pacific, at Clark Avenue and Twentieth Street, will also be enlarged from 550,000 to 750,000 bushels. Work has begun on the excavation, and the contractor is pledged to have the structure in complete running order for the 1st of September.

LOSS OF GRAIN IN STORE.

An agricultural exchange says, wheat, threshed apparently dry in August, and placed in a garner, will lose 6 per cent. of its weight by still further drying in six months. It follows, therefore, that 94 cents a bushel in August is the equivalent of $1 in February, to say nothing of cost of storage, loss from destruction by mice, rats, worms, etc., and interest on the money. Taking these into consideration, 90 cents in August for wheat would be very nearly the equivalent of $1 in February. Corn, gathered dry in November, will lose about 20 per cent., (a little more or less, according to dryness in the fall) in six months. Thus 40 cents a bushel in November would be equivalent to 50 cents in May, omitting any account for interest, or damage, or loss from vermin. Potatoes will shrink in bulk or weight one-third.

Reports from Red River Valley, the great spring wheat section of Dakota, show a prospect of 18,000,000 bushels of wheat—double last year's crop.

Legal Notes.

Liability of Grain Inspector for False Certificate.

Defendant was grain inspector of St. Louis, appointed by the Merchants' Exchange of St. Louis, and his certificates were, by a well known usage, accepted in the grain market as evidence of the grade of grain. Knowing this, and that his certificate might be sent to a distant port with the draft of the shipper, and that it would be received as evidence that the grain was of the grade represented, defendant inspected for the shipper twenty thousand bushels of wheat into a barge, and negligently gave his certificate that the wheat was No. 1 red winter wheat. The wheat turned out to be No. 2, an inferior grade. On the faith of this certificate plaintiff paid the draft accompanying the certificate, and brings his claim against the inspector for the actual damage sustained by him, which he claims to be the difference in market value at the time between No. 1 wheat which he paid for and the inferior grade No. 2, which he received. There is no evidence and no claim of fraud or collusion. The wheat was inspected for the shipper when passing from the elevator to the barge, and the shipper had directed the elevator company to load into the barge certain proportions of a high grade of No. 1 and No. 2 wheat, hoping that the mixture would pass for a fair grade of No. 1. Of this the inspector had no notice: Held, that, even if it be conceded that the grain inspector was a public officer, having imposed upon him by the law the duty of giving certificates on inspection of the grade of wheat to those who apply to him and pay him for doing so, his liability for a false certificate given negligently and without fraud or collusion, extends only to the party taking the certificate, and for whom the wheat was inspected, and not to a purchaser who did not contract with the inspector, but who relied upon his certificate and was deceived. If a public officer, the collector was bound to transact the public business with care, and a failure to do so by giving a false certificate was a breach of contract; but this contract was with the public, and an individual could not complain of the breach of it; and the position is not changed by the knowledge of the inspector that his certificates are sometimes used as evidence of grade, on the faith of which grain is paid for, without examination, by the buyer. The limit of the doctrine of actionable negligence is, that the person occasioning the loss must owe a duty arising from contract or otherwise to the person sustaining such loss. It does not appear that the act invoked by the plaintiff amending the act incorporating the Union Merchants' Exchange [acts 1864, p. 260] imposes upon the grain inspector any duty of inspecting grain leaving the elevator. Where there is no contract, proof of usage will not make one. Affirmed. Opinion by Bakewell, J. Gordon et al. vs. Livingston. Court of Appeals, St. Louis.

Warehouse Receipts.

Warehouse receipts made payable to bearer, not transferred by indorsement, are not negotiable in Missouri as mercantile paper. And the transfer of a cotton note without endorsement gives no greater rights to the transferee than he would have acquired by the transfer of the cotton itself. And where the vendor, though desirous of retaining a lien, was deceived by the vendee into allowing the warehouse receipts to pass into the hands of the vendee in such a way as enabled him to pledge the goods under such circumstances as would lead to the belief that the property was his to sell or pledge, the vendor lost his lien as against the innocent pledgee. St. Louis Court of Appeals.

Pledging Warehouse Receipts.

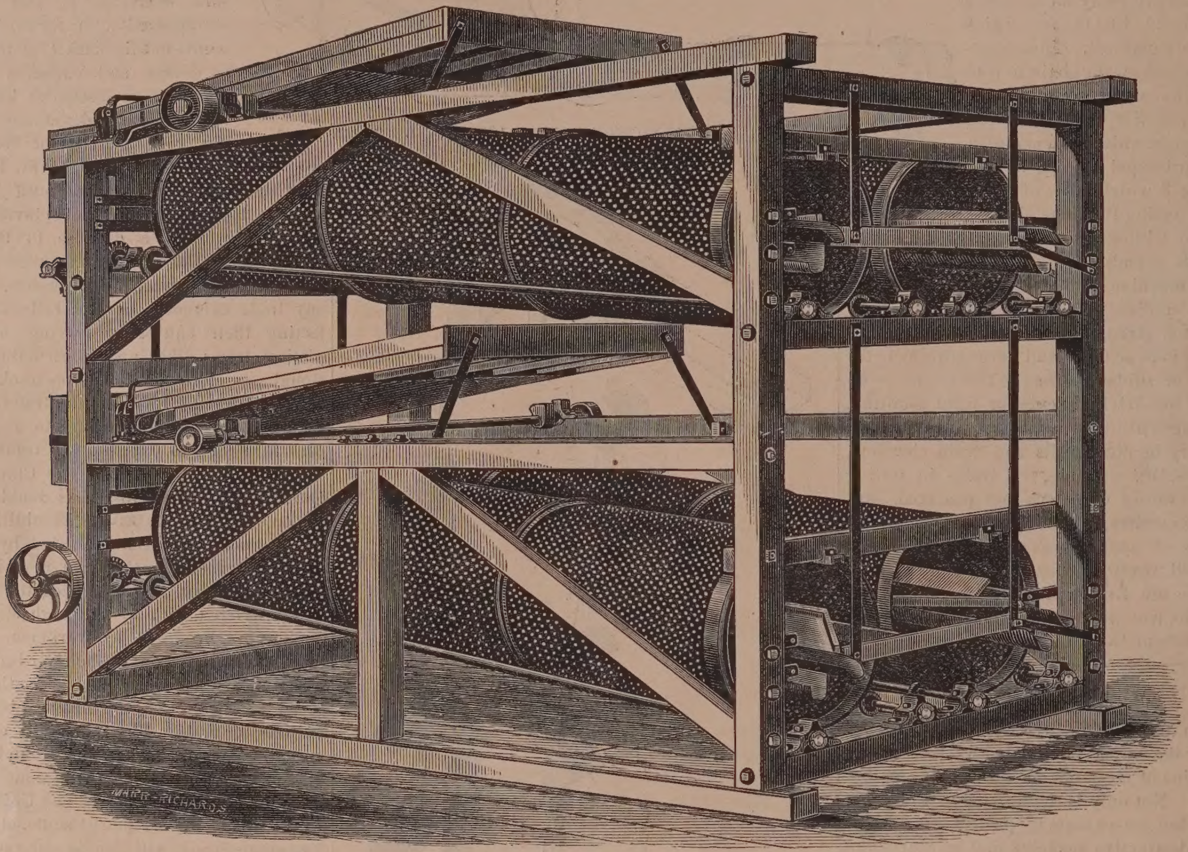
A factor can not pledge the goods of his principal for his own debt. He can not place the goods of his principal in a warehouse and obtain a warehouse receipt and pledge the receipt, although by statute the warehouse receipt is made negotiable in the same manner as bills of exchange and promissory notes, and although the statute declares that the endorsee of the receipt "shall be deemed the owner of the goods, so far as to give validity to any pledge, etc., as on the faith thereof." The factor may pledge the goods to the amount of his lien for advances made by him to his principal, and the pledgee is secured to that extent, not to the extent of further money loaned by the pledge. United States Circuit Court, Eastern District of Missouri.

Elevator Receipts.

Plaintiff held storage receipts for grain deposited in A's elevator, and the defendant claimed under "surrender receipts" issued by A, who was also a dealer in grain: Held, the warehouseman has no power to issue certificates or receipts to persons who make no deposit of wheat, or to make such certificates or receipts a lien on wheat actually deposited by others and for which other receipts have been given. The assignee of a deposit receipt or wheat ticket, has the assignor's title to the wheat, but the "surrender certificates" are not assignments of wheat tickets, or receipts. Greenleaf vs. Dows, Supreme Court of Minnesota.

Grain Delivery.

A sold corn to B for cash. The course of business between them was that A placed the grain on the vessel named by B, taking the ships' receipts in his own name, and the delivery of these receipts, duly endorsed, delivered the grain, for which payment was made on the following Wednesday or Saturday. The grain in this case was delivered on the boats designated by the purchaser, and the ships' receipts were given to the vendor, who refused to deliver them to the buyer unless he promised prompt payment. He promised to pay on the following morning, and the receipts were handed to him. On these receipts there were printed notices that delivery was not made, nor did the title pass, until actual payment: Held, that the delivery of the ships' receipts on the promise to pay was presumptive evidence of an absolute delivery of the grain and of credit given therefor. Also that the referee before whom the case was tried was not bound to find that the delivery was made subject to the terms of the printed notices. Parker vs. Baxter, New York Court of Appeals.



THE KURTH COCKLE SEPARATOR (PLAIN)—LARGE SIZE; FOUR CYLINDERS.

CAPACITY OF DRY GRAIN FOR MOISTURE.

The claim that grain absorbs moisture enough on a sea voyage to pay the freight charges has been verified by some test experiments made at the California Agricultural College. Various kinds of grain were placed in a moist atmosphere and the increase in weight was noted. The greatest increase was during the first twenty-four hours, the absorption being nearly 33 per cent. of the total absorbed during the fifteen days' exposure. The following table shows the figures:

	First 24 Hours.	Total in 15 Days.
Oats	2.79 per cent.	7.70 per cent.
Barley	1.45 per cent.	7.00 per cent.
Wheat	2.45 per cent.	6.56 per cent.

From the results obtained it was computed that perfectly dry grain at 65° Fah. would absorb as follows: Oats, 29.08 per cent; barley, 28.17 per cent.; wheat, 25.02 per cent. Under ordinary conditions the percentage is perhaps not so high, 15 to 16 per cent. probably being the average.

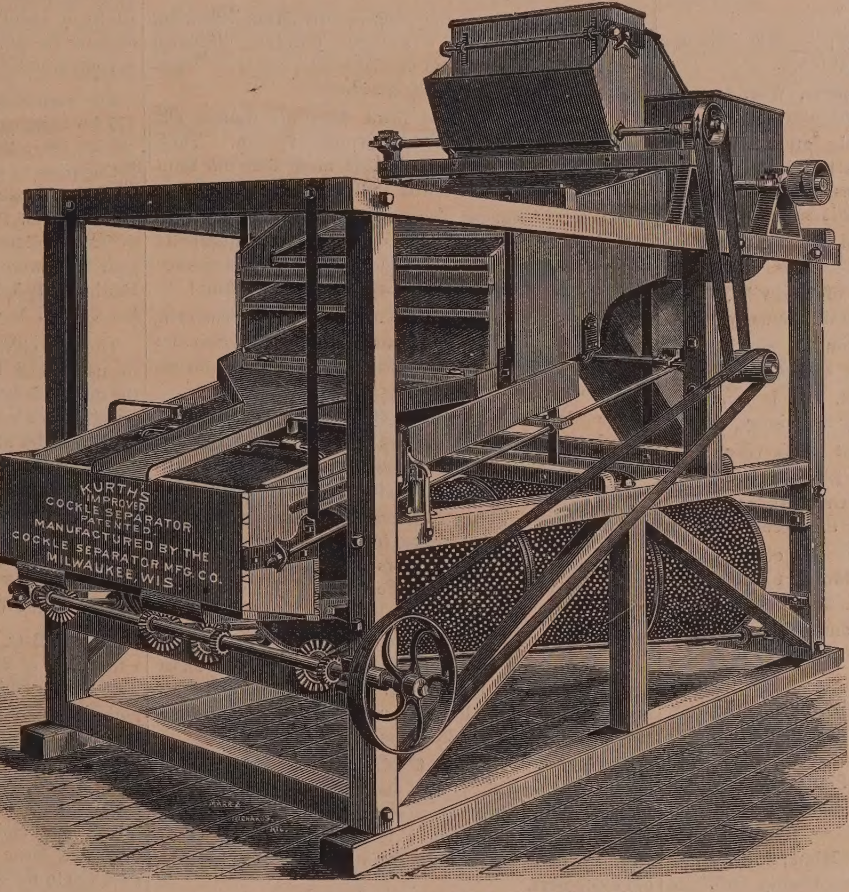
KURTH'S PATENT COCKLE SEPARATOR AND RICHARDSON'S DUSTLESS OAT SEPARATOR.

The separation of no seed has occasioned inventors so much trouble as that of the cockle. All sorts of devices have been tried, most of them proving failures, several indifferently successful and only a very few successful enough to gain and maintain a reputation. The desirability of a perfect cockle separator is so well understood by all who wish to cleanse wheat either for milling or other purposes, that we need offer no apology for presenting the reader with an illustration and brief description of Kurth's Patent Cockle Separator, made by the Cockle Separator Manufacturing Co., of Milwaukee, Wis.

On the opposite page we give a cut of the plain cockle machine, one of the largest sizes made by the manufacturers. The principle on which these machines act is the difference in size and shape between the cockle and the wheat. Sheet zinc cylinders are constructed, haaing indentations on their inner surfaces which are large enough to accommodate the cockle but too small to hold the wheat. The whole kernels are first separated from the broken wheat and foreign seed and the broken wheat and seeds further separated by the revolving indentated cylinders. The broken wheat is discharged with the whole kernels while the cockle and other foreign seeds are thrown out by themselves.

On this page we show the cockle separator combined with Richardson's Dustless Separator, which last machine is also made by the Cockle Separator Mfg. Co. The oat separator removes oats, stones, whitecaps, straws, chess, dust and dry wild garlic. One suction operates on the wheat as it enters the machine and another as it leaves it, this latter being for the purpose of removing any dirt loosened by the scouring action in the cylinder. Each suction is independent. The machines have double eccentrics, one to shake the sieve riddle and the other the feed and discharge spouts. The feed hopper has a feed roll to prevent clogging. The wheat enters the separator through a suction spout, where it is subjected to a strong upward current of air, regulated by a valve, which removes the screenings, light oats, chaff, etc., the screenings being let through at the drop spout cleaned, ready for market, while the chaff and dust are drawn into the fan and are blown out of the building; the wheat then passes to the center of the machine and through a series of sieves which take out the oats, etc., after leaving which it passes over a fine sieve extending the entire width of the machine, which removes all the small seeds, etc. The wheat then enters another suction spout and undergoes the same process as when first entering the machine. Motion is given to the sieves by a close eccentric, which enables them to run smoothly and steadily without jar, thus causing the oats to pass off while the wheat is shaken through. Each sieve can be cleaned, if necessary, without stopping the running of the machine.

Both the Cockle Separator and Richardson's Oat Separator have attained a wide popularity among millers and warehousemen, and the same may be said of the Beardslee Grain Cleaner, also manufactured by this firm. All of these machines are built in the most substantial manner and sold at reasonable prices. The Cockle Separator Mfg. Co, of Milwaukee, Wis., the manufacturers will be pleased to furnish any information which the reader may desire, on application being made to them.



KURTH'S COCKLE SEPARATOR WITH OAT SEPARATOR.

C. A. Pillsbury & Co., of Minneapolis, Minn., have returned to W. W. Ingraham, of this city, their two No. 8 combined Excelsior machines in order to have Mr. Ingraham's latest improvements added to them. This elevator prepares all their grain for milling.

DECREASE IN THE AGRICULTURAL INTERESTS OF GREAT BRITAIN.

Cattle raising and fattening in Great Britain and Ireland, on account of presenting to the farmer the most available mode of getting ready money, is a fair indicator of the agricultural condition of the Kingdom. In this direction a great falling off is shown by recent returns. During the thirteen years from 1868 to 1881, the decrease in the number of sheep in these countries was 7,710,000, or 21.65 per cent.; of cattle, 822,000, or 9.04 per cent. Valuing them at $12.50 per head, this shows a loss of $34,750,000. The value of these figures as representing agricultural decline in the United Kingdom, is increased by the fact that there was a larger acreage in permanent pasture, grasses, roots, etc., used for fuel during these thirteen years than immediately previous, amounting in 1881 to an addition of 3,377,000 acres, or an increase of 10.8 per cent. Analysing the figures in another way, and still, as before, counting the cattle as sheep, there was a loss during these thirteen years of eighty-six head per hundred acres of permanent pasture and land used for cultivating fuel, or of 12 per cent. There was also, according to returns, a large decrease in the number of sheep bred; and a very small increase in the number of cattle born. The decrease in the number of lambs during the thirteen years already mentioned was 3,029,000, or 23 per cent., and the increase in the number of cows and heifers, in milk or in calf, during the same period was 8,000, or only 2 per cent. These facts, says the *New York Tribune*, emphasize the deep interest which is felt, not only in Ireland, but in Great Britain also, in the laws affecting lands and the farmers' rights and holdings. Recent bad harvests, and the intensity of competition, steadily increasing with America and her own possessions and colonies, added to the cogency and importance of these questions.

THE GRAIN TRADE IN OLDEN TIMES.

Britain, in the time of the Romans, remarks the *Corn Trade Journal*, was the chief granary of the imperial legions posted in Germany and Gaul. When the Roman colonies of the upper Rhine were ravaged by the barbarians in the time of the Emperor Julian, a fleet of 800 vessels was built to bring corn from Britain. England herself was at one time a frequent prey to famine, and that too in its most terrible form. Stow tells us that the extremities of famine have driven the people of England to eat horses, dogs, cats, and the bark of trees, and, what is most horrible to imagine, even to feed upon their own children. It is recorded that during a terrible famine in the year 1316, criminals upon being cast into prison were torn into pieces and devoured by the hunger maddened wretches that lay famishing in the loathsome dens that constituted the prisons of the period. Incredible as these facts may read, they are nevertheless confirmed by Maitland and other historians. In those times, when the people lived from hand to mouth, and dearth of plenty depended from year to year upon the state of the harvest, the fluctuations in the price of corn were of the most violent character. During the twelfth and thirteenth centuries it fluctuated from 1s to £20 per quarter, yet it is recorded that it was sold during the same reign at sixteen pence. Such extraordinary fluctuations are no longer possible. The rapid transmission of intelligence and facilities of transport, whereby transactions of the greatest magnitude are nowadays conducted with promptitude and dispatch, preclude sudden and extreme fluctuations, excepting when the natural course of trade is politically affected, and the machinery of commerce thrown out of gear by war, or other extraneous circumstances. A dearth in any country within the pale of civilization is now no sooner apparent than the fact is flashed by electricity to every great center of the trade throughout the world, and the intelligence is the signal for a fleet of grain laden vessels to hasten to the famine threatened shore; while over speculation on the part of the importers not infrequently reduces prices considerably below average quotations. An instance of this occurred during the recent failures in our own crops, when, owing to the extensive operations of importers, prices were lower than when our fields have been teeming with plenty. Ireland at one time appears to have supplied England with considerable quantities of corn. Edward II, when he invaded Scotland in 1322, drew a large portion of his supplies from that Island. By-the-by, so late as the time of William the Conqueror, English slaves were regularly exported to Ireland. Bristol seems to have been the chief seat of the British slave trade, and Wolfstan, Bishop of Worcester, the Wilberforce of the period, preached a crusade against its practice. That English men, women and children should have been sold as slaves to the Irish, is a circumstance in the history of the two countries that their present relative positions render perfectly incredible. The observation made by Gregory, when he saw the English children exposed for sale in the streets of Rome, "Non angli sed angeli;" a remark stigmatized by A'Becket in Leech's Comic History of England, as an atrocious pun, indicates the existence of the slave trade in the time of the Romans, and William of Malmesbury refers to the odius custom as having had such a hold upon the people that they did not scruple to sell their nearest relatives, and even their own children into slavery.

THANKS.

The American Elevator and Grain Trade is the title of a new monthly publication, the first issue of which will appear July 15. It is the enterprise of the Mitchell Bros. Co., Chicago, known to everybody as publishers of the *American Miller*. The new venture will doubtless be a success, for the Mitchells are themselves a success in every particular, as business men, able journalists and good citizens, and as it will have the field to itself at the start, and backed to win, it will very likely keep to the front. We shall expect it to be an *Elevator* in more senses than one.—*The Millstone.*

Elevator building is active in the Northwest.

Elevator Notes.

Appleton, Wis., is to have a new elevator.

A large grain elevator and flouring mill is being built at Athens, Ga.

Messrs. Rhodes & Fleming are building a Chase Elevator at Lostant, Ill.

Johntz, Rice & Co., of Abilene, Kas., are building a large elevator and flour mill.

Smiley & Miller succeed Isabel & Miller in the grain business, at Storm Lake, Iowa.

Messrs. Wood & Co., grain dealers at Harvard, this State, were burned out recently.

The United States produces 30 per cent of the grain of the world, and 31 per cent of the meat.

Mr. J. B. Canterbury, of LaCrosse, Wis., is building a 50,000 bushel elevator at Jefferson, Wis.

The Wabasha Elevator Co., of Wabasha, Minn, have built a new elevator at Eau Claire, Wis.

Messrs. Morehouse & Phelps, of Springfield, Wis, are building an improved elevator at that place.

Messrs. W. E. Coats & Co., of Sparta, Wis., are contemplating improvements in their elevators.

G. W. Van Dusen & Co., the big grain dealers of Rochester, Minn., have dissolved partnership.

Mr. G. H. Kundrick contemplates building a 30,000 bushel elevator at Winona, Minn., this season.

Hunt & Kissinger succeed H. M. Hunt & Co. in the grain business at Whitehall, at Wrightsville, Ill.

The Noel Mill & Elevator Co., of Nashville, Tenn., handles over a million bushels of grain annually.

Mr. A. J. Sawyer, of Duluth, Minn., is making extensive improvements in his elevator at that point.

Mr. Jacob Williams, of Freeport, Ill., is repairing his elevator, and putting in cleaning machinery, etc.

The steam mill and elevator at Coffeyville, Kas., were burned June 9. Loss $10,000, partially insured.

J. D. Howard, a grain dealer at Grinnell, Iowa, had his house entirely destroyed during the recent tornado.

Messrs. Charles L. Epps & Co., of this city, contemplate building an elevator as an addition to their malt house.

Messrs. E. Briggs & Co., millers and grain dealers at Roodhouse, Ill., have dissolved partnership, Ellis Briggs continuing.

John W. Hunter, of Morse, Johnson Co., Kansas, expects to erect a combined mill and elevator at that place this fall.

Messrs. N. H. Virgin & Son, of Platteville, Wis., are changing over their elevators and making additional improvements.

G. W. Van Dusen, of Rochester, Minn., has opened an office at St. Paul, in order to more readily facilitate the handling of grain.

The timely arrival of 140,000 bushels of wheat at Philadelphia from New York saved those who were short there for June delivery.

Messrs. Fair & Edwards, of Gonzales, Cal., have dissolved partnership, D. K. Edwards continuing the warehouse business at that place.

The Minnesota & Dakota elevator Co., of Minneapolis (the Millers' Association), is building ten new elevators, with modern improvements.

Messrs. Cripp & Comstock, of Independence, Wis., are putting power into their elevator, and making improvements in their machinery.

Messrs. C. A. Pillsbury & Co., of Minneapolis, Minn., have built an addition to their elevator in Minneapolis, and are putting in other improvements.

The Great Western Manufacturing Co., of Leavenworth, Kanses, have recently sold machinery to S. N. Smith, for an elevator at Lyons, Kansas.

Messrs. Ernest Hess & Son are making extensive improvements in their malt house and elevator at the corner of Ashland avenue and Kinzie street, this city, and are working fifty men.

The town of Hammond, near Chicago, Ill., is to have a large glucose factory. It will be built of brick, four stories high, and will employ upward of one hundred men. The stock company will have a capital of $100,000.

Mr. E. A. Abbott, of Marshalltown, Iowa, proprietor of a chain of elevators, is putting one of his large wheat driers in operation in the elevator of the St. Paul Elevator Co., St. Paul, Minn.

T. B. Sheldon & Co., of Red Wing, Minn., and F. F. Sandberg & Co., of the same city, are both putting in engines and machinery into their elevators, which were formerly bank elevators.

E. L. Newberry's elevator, at Malcom, Iowa, had its roof taken off, and was otherwise injured by the late cyclone. His loss, including a thousand bushels of wheat, amounted to $3,000.

The Phœnix Milling Co., of Platte City, Mo., are building an elevator at that place. They have contracted with the Great Western Manufacturing Co., of Leavenworth, Kansas, for their machinery.

The fine new mill and elevator now being constructed at Humboldt, Neb., by the Great Western Manufacturing Co., of Leavenworth, Kansas, for Linn, Cooper & Brinson, is rapidly approaching completion.

It is the purpose of the Minneapolis, Minn., Chamber of Commerce to erect a $125,000 building, provided they are able to secure an available site, either on Washington, Nicollet, or Hennepin avenue.

Illinois, Indiana, Ohio, Iowa, Missouri, Kansas and Nebraska, produce a large surplus of corn. These states yielded in 1880 considerable more than one thousand million bushels, and in 1881, 737,000,000.

The recent sale of elevators in Minnesota made by Mr. Magill, to the Millers' Association of Minneapolis, did not include those in which Magill & Co, are interested on the Manitoba line, north of Glyndon, Minn.

The Great Western Manufacturing Co., of Leavenworth, Kansas, are building an elevator at Falls City, Neb., for Maust & Slocum, the machinery includes a steam engine, Barnard & Leas sheller, cleaner and separator.

The "bucket shop" of C. B. Hunt, at St. Louis, Mo., closed up July 5. It is said that Hunt lost $25,000 in the June squeeze of wheat, and that his total losses will amount to $45,000, all of which it is said will be paid.

G. C. Griswold has sold the old Armour warehouse at Seneca, Ill., to N. J. Rulison, from whom he purchased the same property five years ago. He also sold Mr. Rulison his interest in the propellers "Imperial" and "Nashotah," with six barges.

The Richmond Elevator Co., of Richmond, Va., have just completed a 400,000 bushel Elevator on the Chase plan. The house is supplied with six elevators, and is arranged so that the building can be enlarged to accommodate an increase of business.

The Rivet Bucket Co., 61 Market street, Chicago, has entered the eighth year of its business life. Belting, buckets, bolts, conveyors, scoops, etc., are its specialties. Mr. N. Hawkins remains in the management as secretary, and gives his personal attention to new as well as old customers.

Geo. W. Craig, of Sheridan, Nebraska, has contracted with the Great Western Manufacturing Co., of Leavenworth, Kansas, for the machinery of an elevator to be built at that place. It will be supplied with all the latest improved machinery, including Barnard & Leas sheller, cleaner and separator.

Thomas Lowry, of Minneapolis, Minn., has purchased the McMullen Elevator, at that place, paying $12,000 for it. It is intended to increase its capacity from 40,000 to 150,000 bushels. A portion of the building will be used as a feed and grain storehouse by the street railway company, of which Mr. Lowry is president.

The Patented Triple Draught Tubular Boiler comes before the public with high testimonials from scientific and practical men. It is claimed to be among steam boilers what the "Corliss" and other high rank engines are among steam engines. Parties interested in cheap steam should write to the Hawkins-Henessey Boiler Co., 61 Market street, Chicago.

The Chesapeake & Ohio Railroad are preparing to compete for a part of the export grain trade, among other things building a large elevator at Newport News, Va., its seaport terminus. Its road is quite a short line to the sea from the Ohio valley, and points as far north as Indianapolis, St. Louis and Kansas City, which include a large part of the winter wheat and corn belt, besides it may occasionally get wheat from Kentucky and Tennessee on its way East. Although this road has no direct advantage over other roads further north for carrying grain to the seaboard, it is regarded to be still in a position to secure part of the traffic. The country where the Chesapeake & Ohio can best seek shipments now patronizes the Baltimore & Ohio and Pennsylvania roads, which pass directly through this section.

San Francisco is slightly agitated by the fear that New Orleans will ultimately become a great export market for southern California wheat. The Southern Pacific Railroad is charged with working in the interests of New Orleans, and the charge does not appear without foundation. This road charges only $20 per ton for carrying breadstuffs from California to New Orleans, a very low rate indeed.

Mr. A. H. Stonebraker, of the firm of Stonebraker & Co., has been quietly perfecting a plan to convert the old stone mill on the river bank, at St. Charles, Mo., into a grain elevator. He proposes to establish a company to be called the St. Charles Elevator Company, with a capital stock of $50,000. The plan for the elevator building shows a large three story structure, with a capacity of about 100,000 bushels. In connection with the elevator the purchase and running of a small steamboat is contemplated.

The grain receipts of New York in 1860 were 54,275,475 bushels, against 171,776,749 bushels in 1880, and 139,898,188 in 1881. The receipts at the six principal competing ports in 1860 aggregated 25,643,781 bushels, against 198,949,685 bushels in 1880, and 150,204,537 in 1881. The percentage of the values of breadstuffs exported from different collection districts of the United States for the year 1881, were as follows: New York 45.6 per cent., Baltimore 18.5, Philadelphia 8.6, San Francisco 8.4. Boston 6.5 and New Orleans 5.3 per cent.

The new elevator at Eau Claire, Wis., is about ready for use. The building is 64 by 28 feet, and the top of the cupalo is 64 feet above the ground. Under the whole building is a roomy basement, enclosed by massive stone walls, besides all the necessary machinery for shelling corn, cleaning grain and grinding feed, the elevator has storage room for 25,000 bushels of grain. Three minutes is all the time required for taking in a wagon load of wheat, and a freight car can be loaded with grain in five minutes. It has an Ingraham Grader and Scourer, furnished by W. W. Ingraham, of this city. This elevator is erected by the Wabasha Elevator Co.

John F. Betz, brewer, of Philadelphia, has purchased a township of 23,000 acres of land near Bismarck, D. T., with the intention of raising barley, malting it there, and then shipping it to Philadelphia. His brewery here has a capacity of 300,000 barrels annually, and three other establishments in New York, with which he is connected, can turn out 200,000 barrels. He expects to raise 500,000 bushels of barley per annum on his Bismarck land, and intends building there a large elevator, extensive farm buildings, etc. Mr. Betz will spend $100,000 in the enterprise, beside the purchase money for the land, inside of a year. Betz is worth over five millions.

The Topeka Mill and Elevator Co. are putting up extensive works at Topeka, Kansas. P. G. Noel is president of the company, and L. Z. Leiter, of Chicago, the principal stockholder. The company contemplates expending over $100,000, and work on the buildings is already well along. They are building a 60,000 bushel grain elevator, which will store the grain for the mills—a large flour mill and a linseed oil mill—and also do a shipping business. The Chase Elevator Co., of Chicago, are superintending the building of the elevator; all the machinery and lumber being furnished in Chicago. The work is being rapidly pushed forward, and all will be ready for operation in about sixty days.

The following from the *Free Trader*, of Ottawa, Ill., is handsome, and almost brings the crimson roses to our cheeks: "The Mitchell Bros. Co., composed of the Mitchell "boys," so well known in this city, now publishers of the *American Miller*, will, July 15, begin the publication of a new journal, to be called the AMERICAN ELEVATOR AND GRAIN TRADE, devoted to the elevator and grain shipping interests of the country. These gentlemen have made the *American Miller* the leading journal of its kind in the world, unquestionably; and we are sure their new venture will take a leading place from the first number. There is no paper of this kind in America, so that the field is large, and one also needing a paper of just this kind."

BOILER INCRUSTATION.

From an interesting pamphlet entitled, " Literature of the Road," we make the following extract: "Passing the Falls of the Schuylkill, we stop, being interested in Manayunk, on the eastern side of the river. In visiting many manufactories here we became, as is often the case, oblivious to everything except one specialty. There we learned of a matter which must prove interesting to the general reader, from the fact that it not only presents itself as a matter of economy, but is connected intimately with human life and property. We allude to the safety in managing steam boilers. In 1880, for instance there were 170 boiler explosions in the United States that are on record, by which 250 persons were killed, 555 injured, and an immense amount of property destroyed. The main cause of these accidents is ascribed to the impurities in natural waters everywhere. The effect of this cause is incrusting or corroding the boiler. It is lamentable to think that so much life and property is lost, and so much misery caused from the neglect of using a simple remedy, which we learned at Manyunk had been found to be effectual.

Incrustation or scale must be prevented by neutralizing the mine and mineral waters which contain lime, iron, sulphur and carbonates, and destroying their chemical affinity to the iron of the boiler, to which they make the crust. Moreover, any old crust or scale which has been formed must be decomposed, so that the whole body of alien matter may be blown out each day. Corrosion, the other enemy to the safety of boilers, is a singular and mysterious phenomena. It is both external and internal. Its appearance is not always even suspected, much less discovered, except by experienced men.

The simple remedy for both these " afflictions," as they may be called, to boilers, we found had been applied at Nixon's Paper Works, where they have used Lord's BoilerCompound for years, which has successfully established itself within the eight years in which it has been known, as the great remedy for both these generous effects. Mr. G. W. Lord, long connected with many mechanical enterprises, has succeeded in introducing this product of his practical ability not only through Pennsylvania, but throughout South America, Canada, Cuba, Mexico, etc. His manufactory is at 316 Union Street, Philadelphia.

OUR EARLY GRAIN TRADE.

In the year 1790 there were exported from this country 1,124,458 bushels of wheat and 724,623 barrels of flour. The year 1879 shows an export of wheat more than 100 times greater than 1790, amounting to 122,353,936 bushels, while the export of flour aggregated for the year 5,629,714 barrels, or nearly the same increase. What an immense significance is attached to the figures I have just read? What progress is indicated by them? In the year 1790 the original thirteen States were stretched along the Atlantic coast, a mere fringe to the mighty Government that was afterward spread over the continent, from ocean to ocean. These States contained a population about the same as the State of Ohio does to-day.

The export of wheat seems to have continued in about the same amounts till the year 1795, when it fell off to 141,000 bushels, and kept declining till the year 1789, when only 10,000 bushels were sent out of the country. After that there seems to have been a gradual improvement to the year 1807, when 1,173,000 bushels are on the records.

The year 1810, however, shows an almost entire wiping out of our report in this line, but 1,752 bushels having been sent out of the country. In 1815 there are to be found no entries of exports of wheat, and only 193,000 barrels of flour. From 1815, however, the flour reports took an advance to over 800,000 barrels, and have continued to run up heavy every year down to the present time, increasing until 1879, a year showing an aggregate of 5,629,000 barrels, valued at $29,500,000. Exports of wheat varied from 1814 to 1826 and 1836, showing only 2,062 bushels, while in 1840 1,720,000 are recorded. In 1857, the year of panic, we shipped abroad 14,570,000 bushels, and in 1862 the grand figures of 37,800,000 bushels were reached. It was not until 1873, another panic year, that the figures of 1862 were beaten and doubled, the value being $101,421,000. 1878–1879 showed the same result, and the great year of 1879 showed 122,353,000, valued at $130,701,000.

Late Patents.

Issued on June 6, 1882.

Dumping Car.—Thaddeus M. Hall, Cameron, Mo., assignor of one-half to William McCollum, same place. (No model.) No. 259,272. Filed March 23, 1882.

Car Starter.—Domingo Negrotto, Jr., and William B. Fleming, New Orleans, La. (No model.) No. 258,941. Filed March 21, 1882.

Car Starter.—Jacob B. Rohrer and Alexander Goodhart, Carlisle, Pa. (No model.) No. 259.215. Filed April 13, 1882.

Railway Weighing Scales.—Frederick Casse, Hoarler, Denmark. (No model.) No. 259,093. Filed February 1, 1882.

Issued on June 13, 1882.

Dumping Car.—John N. Rice, Newcastle, Pa. (No model.) No. 259,585. Filed April 21, 1882.

Apparatus for Moving Cars.—Peter J. Stone, Athens, Pa., assignor of one-half to Charles Kellogg, same place. (No model.) No. 259,598. Filed April 24, 1882.

Grain Conveyor —Henry Harrison, Burlington, Iowa, assignor of one-half to Lewis R. Fix, same place. (No model.) No. 259,387. Filed April 8, 1881.

Grain Drier.—Edward Thompson, Hokah, Minn. (No model.) No. 259,436. Filed March 3, 1882.

Grain Elevator.—Hezekiah Armington, Atlanta, Ill. (No model.) No. 259,457. Filed April 29, 1882.

Automatic Grain Sampler.—Washington Hawes, Port Richmond, N. Y. (No model.) No. 259,536. Filed March 23, 1882.

Turn Table.—Clements A. Greenleaf, Indianapolis, Ind. (No model.) No. 259,305. Filed January 17, 1881.

Issued on June 20, 1882.

Corn Sheller.—Francis T. Mallon, Pawcatuck, Conn. (No model.) No. 259,882. Filed April 14, 1882.

Grain Register.—Wisley Stringer, Port Dover, Ontario, Canada. (No model.) No. 259,942. Filed September 24, 1881. Patented in Canada July 9, 1881.

Sprocket Wheel.—Francis M. Techner, Columbus, Ohio. (No model.) No. 259,875. Filed May 2, 1882.

Issued on June 27, 1882.

Cockle Machine.—Abraham Life, New Hampden, Va. (No model.) No. 260,212. Filed February 21, 1882.

Grain Separator.—Heman A. Barnard and John B. Cornwall, Moline, and J. Silas Leas, Rock Island, Ill. (No model.) No. 260,150. Filed March 22, 1882.

Apparatus for Starting and Stopping Machinery.—William F. Durfee, Bridgeport, Conn., assignor to the Wheeler & Wilson Manufacturing Co, same place. (No model.) No. 260,175. Filed November 17, 1881.

Speed Indicator.—Nelson P. Bowsher, South Bend, Ind. (No model.) No. 260,156. Filed January 18, 1882.

BARGE VERSUS RAILWAY TRANSPORTATION ALONG THE MISSISSIPPI VALLEY.

Those who are interested in railway and canal topics ought not to lose sight of the question of barge transit along the Mississippi valley. The question is not at all likely to be allowed to remain in abeyance. The possibility of making the natural waterways the avenues for the grain traffic from the extensive regions watered by the Mississippi and its great tributaries, has been frequently discussed, and more lately very vigorously so not only by the New Orleans papers but also by the Florida press. The improvement of the Missouri so as to render it navigable for barges, and the cutting of a canal across Florida in order to shorten the route from New Orleans to Europe, are essential parts of the complete scheme. "A memorial to congress" urges that the employment of barges on the Mississippi and the improvement of its mouth so as to admit steamers of the largest size to New Orleans, indicate that the time has arrived for the dwellers in the Missouri valley to claim to be admitted to the enjoyment of the advantages thus provided, in order that they may " find relief from the enormous burdens of taxation imposed by the necessity of transporting their productions by rail to the Atlantic seaboard."

An experiment was made in 1878, when the Mississippi Valley Transportation Company was induced to send three barges to Kansas City for grain cargoes, and other trips followed. The barges carried the grain to St. Louis for five and a half cents per bushel when the railway rates were thirteen cents for wheat and eight cents for maize; and even at the comparatively low rate mentioned, and though running empty one way the barges earned, it is stated, a profit of 100 per cent. The memorialists add that if they could have moved the whole of their surplus crops for that year the producers would have saved $14,942,243 on the carriage between Kansas City and St. Louis alone, and that if for a crop like that of 1879 they could have employed barges between Sioux City and St. Louis the saving would have been four times the estimated cost of improving the river between those points, a distance of 800 miles, such improvement being necessary in order to allow the traffic to be regular and expeditious. It is estimated that the average cost of transport from Kansas City to New Orleans would be twelve cents per bushel, and three cents per bushel is added to cover the increased ocean carriage from New Orleans to Europe as compared with shipment from New York.

With an advantage of from 13 cents to 18 cents per bushel, and the barge lines making large profits on that basis while the railways were losing money, it is not to be disguised that the barge lines would prove very formidable competitors if they had a clear waterway. In these calculations, however, only one half of the territory which could be served has been taken into consideration; and, to make a long story short, the memorialists estimate that the whole saving by barge transportation against transportation by the railways of the Northwest would be $200,000,000 on a single crop. Half of this amount, it is said, would be more than sufficient to "clean out the Missouri and Mississippi from the Rocky mountains to the Gulf of Mexico, and to construct half a dozen such barge canals as that demanded from the mouth of the Mississippi across the peninsula of Florida to the Atlantic." Evidently there is a big question here with which investors in railways must reckon, and which throws open a splendid field for engineers who are hungry to dig canals.—*Grain and Provision Review.*

A BOSTON ELEVATOR.

The New York and New England Railroad have constructed, at Boston, a new elevator of immense capacity, with machinery for receiving and shipping grain quite noteworthy. The elevator has a capacity of 520,000 bushels, and is under the charge of J. B. Gillett. W. H. Sanborn, formerly of Chicago, superintends the shipping business, in which he has had a large experience. The main building, which has facilities for unloading ten cars at one time, is 162x80 and 138 feet high. By a system of ropes and levers on the ground the machinery is operated by which all the work is done. Steam shovels here unload the cars into the receivers after the grain is weighed by scales capable of weighing exactly one or 36,000 pounds. Iron buckets attached to an immense rubber belt convey the grain to bins, while powerful blowers remove the dirt at the same time. The operator on the ground floor can change at will the conveyance to any bin. Movable pipes on a strong rubber belt are used to load teams for the local trade. For the export traffic four galleries are to be erected, two of which are nearly completed—1,300 to 1,500 feet in length. Large rubber belts, three or four feet wide and about 1,656 feet in length, convey the grain through those galleries, from which, by means of "shippers" at suitable intervals, run upon a railroad track, the grain is loaded directly into the holds of the vessels. By these means 60,000 bushels of grain per hour can be delivered, while vessels can receive cargo and unload at the same time. An engine of 500 horse power is used, with a main driving belt 42 inches wide and 280 feet long. A system of steam pipes are arranged to meet the emergency of fire; and electric bells supply means of communication with all parts of the building.

The Omaha Elevator, at Council Bluffs, Iowa, leased by the Omaha Elevator Co., are putting in improved machinery. The elevator is owned by six railroads running into Council Bluffs. It has a capacity for the storage of one million bushels of grain. The building is 345 feet long, 90 feet wide and 135 feet high. It contains 175 bins and 48 sets of scales, each with a capacity of 700 bushels. Major D. S. Barriger, vice-president of the Omaha Elevator Co., is the manager of the elevator.

The American Elevator
—AND—
GRAIN TRADE.

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ADVERTISING.

This paper has a large circulation among the elevator men and grain dealers of the country, and is the best medium in the United States for reaching this trade. Advertising rates made known upon application.

CORRESPONDENCE.

We solicit correseondence upon all topics of interest connected with the handling of grain or cognate subjects.

WHY WE DID IT.

Possibly an explanation ought to be required of any one who ventures to add another to the list of over ten thousand papers already published in the United States. One of the old Greek colonies in Italy required any one who proposed a new law to appear in the market place with a rope around his neck. If he failed to convince the people that his law was a necessary one, they immediately tightened the rope. Perhaps this law ought to be revived in the case of those who propose to issue new papers, as well as those who propose new laws. We are willing to abide by the decision of the public. Other things being equal those newspapers are deserving of success that have a legitimate field. We leave it to the reader ir there is not a large field for just such a paper as the American Elevator and Grain Trade. The conviction that such a paper would be appreciated and sustained was what impelled us to issue this paper. That we have not been disappointed will be apparent from our advertising pages.

AN EASTERN VIEW OF SPECULATION.

The *New York Tribune* sums up in one sentence what it considers the root of an evil from which the whole country has suffered greatly, especially the past year, speculative "corners" in products. It is "the sale ot property by men who do not own it." Legislature upon this evil has proved, so far, a failure, and has been derided as impracticable; and yet no other subject is better entitled to legislative consideration. Speculation within proper limits may be useful; its excess is mischievous. Legislation has failed to distinguish between these, and the resulting laws, not sustained by the public opinion, have not been enforced. A "corner" is always and necessarily the fault ot the seller. The right to buy all he can, must be conceded to everyone. If he attempt to buy all the wheat in the country, disaster will fall upon him who makes the attempt. But the conditions are changed when a man oversteps his conceded right also to sell what he owns by offering for sale what he does not possess. The owners of the property may, and have the right to make him pay what they choose to ask, and he and his victims are justly the sufferers. Legislation has largely reversed this verdict of the moral sense and treated the real criminal as an innocent victim; and popular sentiment does not sustains it. Illinois, where this evil has been most keenly felt, and where its nature should be most clearly comprehended, has legislated on the ground that all sales for future delivery were wrong. This is a great error. In the mercantile world, agreements on the part of the owner of property to transfer it at some future time to others, when they shall need it, as, notably, in the cotton trade, steadies the market and keeps multitudes of operatives at work out of reach of the disastrous fluctutions. Iron and steel men, pork packers, millers, etc., may make similar contracts with the actual possessors of their required material to public advantage. But when the gambling element of chance enters, and the nonpossessor contracts to deliver what he does not own, then trade and industry are not only not protected, but are exposed to extraordinary dangers. Commercial custom tolerates these sales, but the question is whether it *ought* to do so, and the question for legistative consideration which involves the only safeguard against disastrous corners is: "Whether without prejudice to legitimate business people can be legally prevented from selling what does not legally belong to them."

FREE CANALS IN NEW YORK.

The question of making the Erie Canal a free public highway is to be presented to the suffrages of the people of the State of New York, this fall, by way of a constitutional amendment. This fact has intensified the discussion of a subject which has been before the public for many years, and presents a matter of great interest to the whole country as well as to the whole State, more directly concerned. With New York, points of abstract right and sentiment will have no weight in the decision: that will be based solely upon the effect to be anticipated from it on her future welfare and prosperity. The value of cheap transportation on the cost of living, on the value of property, both farm and city, and on the retention and increase of business, cannot be estimated. Its importance to the city of New York is thus tersely stated by *Truth*: "Make the Erie Canal free as the Hudson River and double its carrying capacities, and it will at once enhance the value and profit of farms, make manufacturing more remunerative, increase commerce and trade, and give our working people cheaper bread. But this is only one phase of the subject. New York is wedged between powerful rivals. Canada has spent $50,000,000 in improving her system of water communication so as to drain off the produce of the northwest through the St. Lawrence. The Pennsylvania Central and Baltimore & Ohio railroads, shorter than either of the New York lines, are competing successfully for the transportation of western produce to Philadelphia and Baltimore. Even Boston is pushing her enterprise through this State to allure traffic to her wharves. And Congress is urged to make vast appropriations for the improvement of the Mississippi, and the construction of a canal in Illinois, to sweep the produce of the west and northwest down that river artery to the Gulf. New York can not stand still without being despoiled of her supremacy and robbed of her commercial sway. And the only step by which we can regain what has been lost, and secure the commercial supremacy of this city for all times and beyond peradventure, is to make the canals free and increase their carrying capacity as the needs of the State require. The increase of trade, and the enhanced value of real and other property will more than pay the cost of the work in five years, if not in three."

The commercial bodies of the city of New York are working in the interest of free canals, and have appointed committees to act jointly, to the end of putting before the people the importance of this amendment. The *New York Produce Exchange Bulletin*, with other prominent papers, is urging a thorough canvass, and the securing the co-operation of mercantile agencies throughout the State for the same object. The *Husbandman*, of Elmira, has published a series of valuable articles on this question, from the pen of James G. Shepard, which have developed antagonistic to criticism. The benefits which have been conferred in the past on the State by the Erie Canal are fully admitted, but it is claimed that the day of usefulness has passed for the canal, and that it has been superceded by the railrcad. In reply it is stated that two years ago the tonage on the canal was the largest in its history, excepting during the period of the war, when the Mississippi was closed. Last year, with short crops, a war of railroads, not only upon one another, but upon canals also, the western bound freights were larger than they had ever been, and the cost of moving grain from Buffalo to New York was lowered half a cent per bushel. The State has realized higher profits during the past two years from this source than in any two preceding years since the construction of the canal. The relative shipment of grain from Buffalo this season have been 200,000 bushels by railroad. The policy of the Canadian government in improving the St. Lawrence River and their canals, and the appropriations of our own to the improvement of the Mississippi, render those routes the real competitors of the canal, and not the railroads. With the canal free at its present capacity, wheat can be carried from Buffalo to New York for four cents, and from Chicago for sixty cents per bushel. A free highway for commerce from the Lakes to the Sea becomes a permanent regulator of the rates of transportation which no railroad corporation could ignore. It would, in a great measure, settle the question of railway monopolies, as to how they are to be met and overcome.

THE CROPS.

We presume that our readers have been in no lack of literature, some of it of a dolorous type, respecting the crops, and we have no desire to present any enlarged prognostications of our own in addition thereto. It seems pretty well settled on all sides that our wheat yield will be the largest ever known, approaching 500,000,000 bushels. Corn, as the reader is aware, is in a very precarious condition in almost all localities. A billion bushels is the extent of the yield figured out by those most competent to judge. A favorable summer and a late fall may add immensely to what appears to be the prospect now. Oats and rye promise everywhere, almost, a yield above the average.

A lot of Chicago grain men went out to interview the grangers the other day and came back corn bulls with a double set of horns each.

The English sparrow is getting in his work as a crop destroyer; and Illinios farmers complain that its appetite for wheat is voracious. One field of twenty acres near Mount Vernon was stripped of every grain by this pestiferous foreign importation.

If you want to reach the elevator men of the country, to sell your goods, advertise in the American Elevator and Grain Trade. This paper has a large constituency of progressive men; and any article of merit which they need, advertised in these columns is sure to awaken interest. Try it and see.

Editorial Mention.

We invite correspondence from all who wish to discuss topics of interest to the trade.

The Girard Point Storage Co., at Philadelphia has reduced its terminal charges, and it is believed that the Port Richmond Elevator will do the same.

Subscribe for this paper. If you are at all interested in the handling of grain we believe we can benefit you a dollar's worth in the course of a year.

The Detroit Cummer Engine Co., of Detroit, Mich., present to the reader the claims of the well known Cummer Engine, in a large advertisement in this issue.

Pittsburgh now has a Grain and Produce Exchange. Its bulls and bears will have to go outside the city limits to see what kind of weather they are having for crops.

W. W. Ingraham of this city, manufacturer of the "Excelsior" Polisher, Separator and Grader, reports business brisk with twenty-two orders ahead for elevators in different parts of the Northwest.

The John Hutchison Mfg. Co., of Jackson, Mich., succeed John Hutchison in the business of manufacturing Hutchison's Dustless Corn Sheller and other machinery. An advertisement by this firm will be found in this number.

The Lechner Mfg. Co. of Columbus, Ohio, Manufacturers of the Anti-friction Roller Detachable Chain Belting, described in this issue are very busy and report an abundance of orders both for their Chain and the other specialties of their manufacture.

We announced that we would issue a sixteen page paper; but so many demands have been made upon our columns that we have been obliged to add four pages more. We presume, however, that subscribers will not complain of this way of breaking promises.

Messrs. Dorr, Allison & Co., commission merchants, 3 Commercial street, Boston, Mass., in sending us their card for this paper, write: "We wish your new venture abundant success. If it *approximates* to the *American Miller* in good qualities it will *deserve* it.

The *Lowell Courier* is unkind. It remarks: "Enterprising Chicago dealers have already bought and sold next year's wheat crop several times over. Tha only "future" they cannot speculate in is their own. It is hardly neccessary for anybody to speculate about their future. It is a sure thing."

An eastern paper says that even if the sun shines through the twenty-four hours on British territory, it may also be said that the reaper runs all summer in the United States. The harvester fights it out on his line from middle spring to early autumn. At Americus, Ga., on the 19th of April, a ripe field of wheat was cut, and others in Texas and elsewhere not much later. Texas finishes in May, Tennessee in June, Illinois and Ohio in July, Iowa in August, and Minnesota may gather some late fields in September. No wonder we keep a fleet of grain ships in motion on the two great oceans.

There is no immediate prospect that the agricultural bureau will be made an executive department of the government, Joseph Nimmo, jr., explains that the proposition is incongruous inasmuch as it proposes to make the bureau an executive department, although it is not charged with any executive functions.

Everything is not lovely with Canadian canals any more than with those on this side of the line. Although vessels drawing fourteen feet of water can go through the new Welland canal, they cannot get through the St. Lawrence canals which will only pass vessels drawing nine feet of water. A craft carrying 17,000 bushels of grain is the heaviest that can get through the canals between Kingston and Montreal. Canadian papers are calling for a deepening of the St. Lawrence canals.

A number of intending advertisers could not get cuts in time to appear in this issue with suitable cards. Among this number are Messrs. Howes, Babcock & Ewell, of Silver Creek, N. Y., one of the best known firms manufacturing grain cleaning machinery in the entire country. Established years ago, they have built up a business which has obliged them from time to time to increase their manufacturing facilities. They have just been making large additions to their works which will give them a third more capacity.

The trouble about grain inspection at East St. Louis culminated on July 12, by the arrest of Clinton O. Dutcher, of the Merchants' Exchange of St. Louis, who was charged with unlawfully inspecting grain in East St. Louis. Both the Merchants' Exchange of St. Louis, and the newly organized Board of Trade of East St. Louis are determined in their opposition to each other's claims. We go to press too early to get the result of the trial of Mr. Dutcher at East St. Louis, which was adjourned to the 17th.

A Late number of the *Inter-Ocean* has the following which will be appreciated not only by editors but also by readers who have seen extraordinary statements made in type: "Note to Proof-readers: Schooners don't carry cargoes of *stoves* from Detroit to Kingston. The Eureka, which passed the Welland Canal on Saturday, had staves—barrel staves. It is seldom or ever, either, that a cargo of animals is taken from Chicago to Erie. The propeller Alaska, which left a day or two ago, had 40,000 bushels of oats, not 40,000 *cats*.

Facts prove that the rate recently adopted by the Chicago Board of Trade by which all trades for future delivery are for No. 2 wheat leaving it to the seller to deliver No. 2 spring or No. 2 red winter wheat, as he may prefer, will tend to draw much larger supplies of winter wheat to this city. It is inevitable that this rule should operate to raise the price of winter wheat compared with spring wheat. One good feature of the rule is that it is in accordance with the enhanced value of winter wheat for milling purposes compared with its value two or three years ago when mills had not learned how to apply improved milling processes to winter wheat. The rule does not in the least interfere with trading in No. 2 spring.

The Philadelphia *Record* attemps to point a moral and adorns a tale by relating the following little story: A year ago George Bennett, an Iowa farmer was convicted of obtaining money by contracting to deliver grain which he did not posess. He was sentanced to three years' imprisonment but he always protested his innocence. Recently the man for whom Bennett was mistaken was discovered, Bennett's innonce was established, and the Legislature will not only reimburse him for his year's loss of time in prison but will make his innocence a matter of public record. This reparation is proper, and in the end the man will probably have little to regret in the matter; but the curious feature of the affair is the law by which such a conviction was possible. If it existed in Illinois about fifteen hundred plaintiff bulls and bears would soon be "settling their differences" with the Sheriff, and the Chicago Board of Trade would look emptier than a St. Louis Sunday school during a dog fight.

If you think this paper has a circumscribed field cast your eye on these figures: In 1870 the amount of Indian corn raised was 760,940,594 bushels; in 1880, 1,754,449,435 bushels. In 1870 the wheat crop was 287,745,626 bushels; in 1880 it was 459,667,632 bushels. In 1870 the crop of oats reached 282,107,157 bushels; in 1880, 407,859,033 bushels. In 1870 the tobacco crop amounted to 262,735,341 pounds; in 1880 it amounted to 473,107,573 pounds. The increase of agricultural products was nearly 100 per cent. in these ten years; and in the last year of this decade, from 1879 to 1880, out of this vast increase of our crops and products, our cattle export rose from $13,000,000 to $14,000,000; corn from $13,000,000 to $50,000,000; wheat from $167,698,000 to $190,546,000; flour from $35,000,000 to $45,000,000; cotton from $209,852,000 to $245,534,381; beef from $7,000,000 to $12,000,000; lard from $28,000,000 to $35,000,000; and pork from $5,000,000 to $8,000,000 annually.

We certainly have no reason to complain ot a lack of subscribers for the Elevator and Grain Trade, considering that this is its first issue. As soon as we announced a month ago that such a paper would be issued we began to receive subscriptions from almost every part ot the country. In nearly every instance the subscriptions were accompanied with words of encouragement. Messrs. Watson, Hanks & Warner, 45 Pearl street, New York, a well-known commission firm, write us "We subscribed for your *American Miller* and like it. Put us down for the American Elevator and Grain Trade. We enclose amount of subscription." Another well-known firm, Trimble & Co., 204 Walnut Place, Philadelphia, write: "Enclosed find subscription for the American Elevator and Grain Trade. This paper will supply a want which we have felt for some time." While we prefer not to make any promises, we can say that we shall leave no stone unturned to make this paper worthy of the patronage of those whose interests it is designed to serve.

Mr. Wm. Watson, Memphis, Tenn., a well-known elevator builder, whose card appears in this issue, called upon us a few days since. He informed us that the finishing touches are being put to the Mempnis Grain and Package Elevator. which he planned and built. The cut of the building shown in Mr. Watson's card gives an idea of the magnitude of the enterprise. The grain elevator has been completed for some time; but high water has delayed the completion of the package part. Following are some of the dimensions of the buildings: Space covered including grain elevator, 555 by 300 feet. Counting all the stories there will be about seven acres of floor room. There will be six package legs to unload goods from boats and three dock legs to unload grain from barges. The grain will be conveyed 260 feet by three drag belts, delivering into the sinks of elevators and unloading barges at the rate of 12,000 bushels per hour. The grain elevator is built on an entirely new plan, dispensing entirely with spouts and posts. There is not a spout in the entire building except the revolving spouts under the scale hoppers. By building on this plan the first cost of the immense amount of spouting necessary in the old style of elevators is cut off and bills for repairs of spouts, sheet iron, etc., things of the past, as on this plan there is nothing to wear out. The grain goes directly to each bin without the possibility of a grain of wheat mixing or getting into the wrong bin or scattering on the floor. Mr. Watson informs us that he has his draughtsman at work getting up plans showing the various ways in which this style of building can be used. He is also making a large model showing the combination of the various parts. He also has some eight or ten patents pending covering the important points. Parties that are contemplating building may consult their own interests by writing to Mr. Watson. He will take pleasure in showing his drawings and model.

THE HENNEPIN CANAL.

The producing classes of the great northwest heard with regret and not a little indignation of the practical defeat, or rather, postponement of the project of digging the Hennepin canal. The people of the northwest were practically solid in support of the measure. It is admitted on almost every side that the canal *must* be constructed some time, and the members of Congress from the five northwestern States simply asked that an appropriation be made for commencing the work at once. The river and harbor bill as it came from the House appropriated $17,367,875. The Senate committee reported amendments increasing the amount appropriated to rivers in the South by $1,114,100, and increasing the amount appropriated for lake and river improvements in the North and Northwest by $120,000.

Now we are not of those who decry every appropriation made by the general government and denounce it as "a steal." While we have our doubts as to the practicability of the schemes urged for the improvement of the Mississippi river, we think the river route of enough consequence to expend even $5,000,000 upon it; but we think that the digging of the Hennepin canal is certainly of enough importance to the whole country to deserve an appropriation for immediate work. As it is, the $100,000 appropriation is to be spent in surveys, which means that the work is to be deferred a couple of years and then run through several Congresses, while rivers, creeks and harbors, that the majority of intelligent people of the country never heard of, are to have lavish appropriations for their improvement,—rivers which Sunset Cox would say rose in the eyes of the members and emptied in their pockets.

We are in favor of the improvement of all waterways which will facilitate transportation, not so much as a measure of opposition to the railways as to put a wholesome check upon them. It is a fact that our water-routes have acted as a brake upon the railroads, and are about the only feasble check upon them that has yet been devised. Improve the Mississippi by all means, but don't neglect to provide waterways along the route which trade has already chosen of its own motion.

A NEW PAPER.

On July 15, the publishers of the *American Miller* will issue from the office of that paper a new journal to be known as the AMERICAN ELEVATOR AND GRAIN TRADE, devoted as its name implies, to the elevator and grain handling interests of this country. The journal will be printed on the finest book paper, and will be issued on the 15th of every month. The subscription price will be the same as the *American Miller*, one dollar per year. —*New York Produce Exchange Bulletin.*

Mechanical.

Cooling Hot Journals.

A simple method of cooling shaft journals consists in placing an endless belt of loose water-absorbing texture on the shaft as near the heated part as may be, and allowing the lower bight to run in cold water, which may be held in a vessel at a convenient distance below the shaft. Continuous contact of the liquid band carries away the heat of friction as it is produced, without spilling or spattering of water on and about the machinery, and without contact of the lubricant in the journal boxes.

How to Measure Wheat.

The *Times* gives this rule for ascertaining the number of bushels of wheat a bin contains: "Level the surface of the wheat, measure the depth in inches, and the length and breadth of the bin also in inches; mutiply these together and divide by 2,150, which is the number of cubic inches in a struck bushel. For instance, a bin 22 1-2 feet or 150 inches wide has a surface of 6,450 square inches, and for every inch in depth there will be precisely three bushels; if the wheat is thirty inches deep in such a bin, there will be ninety bushels in it. As 12 1-2 feet by 3 feet 7 inches (or 150 by 43 inches) is a convenient size for a granary bin, it would be easy to mark the inches on the end or side, and for each inch to mark three times the number of bushels. A mere glance at the mark will then give the quantity of wheat in the bin.

Care of Machinery.

Frequently machines are allowed to run incessantly, long after they have got out of order, and when every stroke or revolution is an absolute injury. These machines are allowed to go on pounding their life away until one day they become useless and are cast out as an ornament to the scrap heap. Unquestionably a large proportion of the machinery in use could be made to do better service and to last longer, were those in charge of it as careful and watchful as they should be. By careful and prudent management a machine may not only be made to do a vastly greater amount of work than though it was neglected, but it can be made to do better and more satisfactory work. In coarse work where shape, size or proportion is not so much an object, as to get a product approximately true, perhaps a machine may turn out productions that will satisfy, even after it is out of order, but machines designed for exact work will not do this. It will not pay to trust fine machinery to the care of inexperienced or incompetent help. As well might one entrust an elegant and delicately fashioned watch to a careless child, as to give a fine machine in charge of a man who is incompetent to take care of it in a proper manner.—*Industrial World.*

Clothe Your Steam Surfaces.

There is much neglect in the matter of preventing loss by radiation in steam engines. We know of no statistics on the subject but those supplied by observation; and this leads us to believe that about five-eighths of the steam engines in use are unprotected as to their cylinders, steam pipes and boilers. Where cylinders are covered there is unquestionably benefit derived from it, even if only lagging is applied. As to steam jacketing cylinders, it is mooted as to whether there is any benefit. E. D. Leavitt, Jr., an engineer of prominence, stated in the meeting of the Society of American Mechanical Engineers, that in a specified engine the fireman could tell whenever the steam jacket was shut off by the increased difficulty of keeping up steam. At the same discussion the late Henry R. Worthington stated that he had never been able to discover any advantage whatever in the use of steam jackets. Where doctors disagree so pointedly, it leaves the matter open to question. It seems to us that in automatic engines, working at high grades of expansion, there is an advantage in a steam jacket of live steam if the jacket itself is protected by lagging from loss by radiation; but in engines that do not expand more than two or three times, it is open to debate. The heat given out by the jacket has to be derived from the boiler in the first instance; and it is a matter for the indicator to determine whether the losses due to cylinder condensation are compensated for, or in any degree diminished by the heat taken from the boiler to prevent it.

In any event, the presence of sensible heat in the engine room, arising from unclothed steam pipes and other details, should be prevented by coverings of some sort; for it is evident that where high temperatures exists money is lost. Not only should the boiler shell be covered, but the fronts also; in fact, every radiating surface, wherever it is. Heat, and whatever produces it, is the motive power. Steam is only the agent. Water costs no money; but the fuel that renders it active and available is expensive, and its dissipation without useful effect is an evil of magnitude. There is no reason for an engine or boiler room being uninhabitable by high temperatures, and no cause for it except a want of attention.—*The Mechanical Engineer.*

Lubricating Bearings.

When a shaft bearing is at rest in its box, the oil is pressed out from under it; either out of the box altogether, or upward to the space above the shaft, between the shaft and box. No doubt the metal of the shaft then settles down to actual contact with the metal of the box. In starting a lot of machinery into motion the metal of the shaft must actually drag for a short distance in contact with the metal of the box, making the machinery hard to start. But as the bearings make part of a turn in their boxes, the oil adhering to the surface of shaft bearings is dragged in between the box and shaft underneath, thus floating the bearing upon a sea of oil. This sea is, however, not very broad or deep; but there can be no doubt of floatation. As flotation takes place the bearings rotate much more easily than when the metal drags in contact. This explains why starting friction is greater than friction of motion in the machinery. When heavy pressures are brought to bear at the boxes, the oil is hindered from entering freely between the surfaces; and if, at the same time, the two surfaces are not nearly parallel, there may possibly, or even probably, be metal contact at the prominences. The high resistance thus caused will produce heat at the rubbing parts, which, by continuous motion, is sure to become excessive, resulting in destruction of lubricant, abrasion of metal surfaces, waste of power, etc.

Covered Pulleys for Belting.

In driving machinery which makes a great number of revolutions per minute, it is often necessary to have comparatively small pulleys, and as for very high speeds the belt should be light and thin as possible, some means of, getting greater adhesion between the belt and pulley are required. To draw the belt very tight will not answer, as that means both straining the belt and putting a great pressure on the bearings next to the pulleys. To use a tightening pulley to increase the "arc of contact" is an awkward and troublesome expedient, as most who try it will find, even at low speed of belt, and one that causes friction and frequently destroys the belt. One of the best means of increasing the friction is to cover the iron pulley with some substance which will cause a greater friction between the surfaces of the belt and pulley. Wooden pulleys are sometimes used, but as they are apt to split, or get out of truth, they are not so reliable. A very good plan is to make an endless band of rubber belting, and draw it tightly over the pulley; the friction between it and the pulley being round the whole circle of the pulley, will always be greater than can well be got between the driving belt and the new face pulley made by the rubber.

Another plan, and one often much more convenient, is to cover the pulley with leather. A good way to do this is to bore a number of holes around the circumference of the pulley, and drive hard wood wedges in these, then tack on any old belting or strips of leather of nearly uniform thickness. Having done this, put the pulley in a lathe and turn up the leather face carefully but with a rough surface, and then cement or glue on another coating of new leather all in one piece; if possible, the joint had better be scarfed, and wooden pins may be driven through the leather, so as to fasten the whole together. This method has been successfully done even with large pulleys. In one instance, where a belt 22 inches wide was running on a pulley about forty inches diameter and required a tightening pulley to prevent it from slipping and had frequently broken, the pulley was covered with leather in the manner described, with the result that the tightening pulley was dispensed with, and a new belt gave no further trouble, driving the machinery without any appreciable slip. The original belt had only been in use a few months, but was found quite brittle from over-straining, and broke short off across its whole width, the elasticity apparently being all exhausted.

It may appear a little troublesome to cover the pulleys, but once well done it is a permanent job and makes a great improvement in the wear and tear of the belt.—*Mechanical News.*

Rules for Belting.

The relation which exists between the horse-power transmitted, with the width and velocity of the belt which transmits it, is based on the following rule:

For rubber belts.—The product of the speed of a belt in feet per minute with its width in inches, is equal to 400 times the horse-power transmitted.

For leather belts.—The product of the speed of a belt in feet per minute with its width in inches, is equal to 500 times the horse-power transmitted.

From these rules we may calculate: 1st. The horse-power which a belt of given width and velocity can transmit. 2d. The velocity with which a given belt has to be run in order to produce a given horse-power. 3d. The width necessary for a belt in order to transmit a given horse-power with the speed it is running the pulleys.

First Rule: Multiply the speed of the belt in feet per minute with its width in inches, and divide by 400 for rubber and by 500 for leather; the result will give the horse-power.

Second Rule: Multiply the horse power by 400 or 500, and divide by the width of the belt in inches, the result will be the velocity in feet necessary to transmit the power.

Third Rule: Multiply the horse-power by 400 or 500, and divide the product by the velocity of the belt in feet; the quotient will be the width in inches required to transmit the power without slipping.

These rules hold for moderate sized belts. Very large belts need not be so wide, but may be 20 per cent narrower than medium sized ones, while for very narrow belts the width must be taken larger by some 20 or 30 per cent. We may deduce from this a rule easily remembered; it is that for every horse-power it takes one inch of belt, if it runs at the rate of 400 or 500 feet per minute, and that the horsepower increases in the ratio of this velocity.

The Use of Belting.

Single belts may be used with economy as wide as twelve inches, but where greater width is required, they should be of double thickness. All belts eight inches wide and more are cut out of the center of the hide, lengthwise of the back; this is necessary to insure their running straight. A wide belt, made of leather cut from the side, cannot, with the greatest care, be made to run evenly, on account of the difference in tensile strength of the different portions of the hide, but a wide belt, made from center of the back, has the same thickness and quality of leather on each side, and must necessarily run evenly, the lightest and weakest parts of the leather being in the middle, and the strongest and heaviest on the sides, the difference in thickness amounting in some cases to as much as one-fourth of an inch. For this reason, when a wide single belt is placed under a heavy strain, the thick heavy edge crowds up toward the center or lighter part running on the crown of the pulley, causing this portion of the belt to lift up from the pulley, and thus prevent that even uniform hug, so essential where the best results are desired. Double belts are stiffer, and better able to resist this tendency to "cup" in the middle and crowd up from the edges, as they generally hug the pulley closely along their whole width. There are those who hold that the single belt, being more flexible, adheres better to the pulley, but this is correct only in cases where they are subjected to but a moderate strain; where a wide single belt has to do heavy work it will be almost certain to stretch, lift up from the pulley in the middle, or the fastenings give way, whether they be of lace, hooks, or otherwise. Therefore, when a single belt must be used, it should be of ample width for the labor to be performed, and run not very tight on the pulleys, so that the fastenings need not be strained. When the fastenings frequently give out, it is a sure sigh that too much work is being done by the belt, and either a wider single belt or a double belt should be substituted.

In writing to advertisers say that you saw their card in this paper.

HISTORY OF THE GRAIN TRADE OF THE UNITED STATES.

[R. H. EDMONDS in the *N. Y. Produce Exchange Bulletin.*]

The development of the export trade in breadstuffs during the past few years has been very rapid. Short crops in Europe have increased the demand for our cereals, especially wheat, and thus farmers have been stimulated to enlarge the area devoted to grain every year. Up to the present time, this rapid expansion in wheat cultivation has been beneficial, not only to every branch of trade and commerce in the United States, but also to European countries whose inhabitants would have suffered severely without the foodstuffs which America has furnished them; but how much further wheat production can be carried without largely overstocking the markets of the world is a very serious question. Should our production of wheat and corn increase during the next ten years at the same rate as during the past ten, 1890 will give us a wheat crop of about 1,000,000,000 bushels, and a corn crop of 3,000,000,000 bushels. One of the most important aids in developing our export grain trade has been the extension of railroad lines to all parts of the West, and the consequent lessening the cost of moving the grain from the interior to the seaboard. Competition between railroads and the water routes for the traffic, although active in the past, promises to be still more lively in the future. New competitors for the grain-carrying trade will soon enter the field, and then the general rivalry will become still more active.

The Chesapeake & Ohio Railroad has now reached tide-water at the junction of the James River and Hampton Roads, and arrangements are already in progress for making Newport News an important seaport. It has one of the finest harbors on the Atlantic coast, and is in many respects admirably fitted to become an important shipping port. The Mississippi River route has attracted much attention during the past few years, but the practical results thus far accomplished have been very unimportant, and New Orleans has not yet become a grain port of any great importance. It is true that there has been some increase in the receipts and exports at that port, but the aggregate trade is still small. The scheme now in contemplation of carrying grain from California to New Orleans for export, bids fair to be carried out, and if such is done, it will have a most important influence upon the trade of that port, and likewise have a material bearing upon the production of grain in California. As the Mississippi River route on the South competes with the railroads for the grain traffic, so the Welland Canal menaces the business of the railroads on the North. It has long been the cherished ambition of the Canadians to make the St. Lawrence river the foreign outlet for the vast trade of the Northwest. To accomplish this they have spent immense sums in constructing canals which, when finally completed, will enable steamers of from 1,500 to 2,000 tons burthen to load at the docks in Chicago and carry their cargoes thence to Europe without breaking bulk. The total distance from Chicago to Liverpool via Montreal is 4,617 miles, while from Chicago to Liverpool via New York the distance is 4,880 miles, or 263 miles greater than by the first named route. Not only will shipments by way of Montreal have the advantage of a shorter route, but the additional advantage of not having to break bulk several times, which, of course, largely reduces the cost of transportation. From these facts it can readily be seen that the opening of the Welland Canal for large steamers must have an important influence upon the grain trade. The railroads having their eastern termini at New York, Baltimore, Boston and Philadelphia, have spent many millions of dollars in providing facilities for handling grain. A large part of their rolling stock is devoted entirely to this traffic, which to all of them forms one of the most important items of their business. The continuance of their share in the handling of grain thus becomes almost an absolute necessity to their prosperity. The reduction of the cost of transportation by rail, and of the handling of grain at the above named ports, is consequently of prime necessity to the railroads. It is believed that the cost of transportation, which has already been greatly reduced in the last few years, can be brought to a still lower figure. A recent writer says: "We have but entered upon the age of steel; no one yet knows the exact economy of the steel rail. The present locomotive-engine is barbarous in its waste of fuel. Not more than three or four per cent. of the power of the fuel utilized by being converted into the actual motion of the train, while the dead weight of the clumsy wooden car averages three to one of the load carried. Not over one pound in a hundred of the fuel consumed is actually and absolutely applied to the movement of the load. The rest is absorbed by waste and friction."

Whatever may be the final result of the contest between the Mississippi River and the Erie and Canadian canals against the railroads, there must be a great reduction in the cost of placing our breadstuffs upon the European markets, if we hope to maintain our vantage ground as the granary of the world. As much of the interest which attaches to the movement of the grain trade is centered in the relative amount handled by the various seaports, it may be of value to present a statement showing the trade at each of the six leading ports during the past ten years. Prior to 1876 the great bulk of the foreign grain trade was monopolized by New York, but in that year the Baltimore & Ohio Railroad entered the field in earnest competition for the grain traffic. In six years the development of the export trade in breadstuffs has been so enormously great that it would be only natural for all the seaports to show a large increase in their receipts and shipments of grain. New York having virtually controlled this trade prior to 1876 and having abundant facilities for handling it, was at that date better prepared to retain it than the other ports were to wrest it from her. During 1876 the Baltimore & Ohio Railroad, then having reached Chicago, the trunk lines engaged in a bitter warfare for this traffic, the New York roads being determined to still keep the grain carrying trade, while the Pennsylvania and the Baltimore & Ohio roads were equally as determined to gain a share of it. The fight resulted in largely increasing the receipts of corn at Philadelphia and Baltimore, although it exerted but little direct influence upon the wheat trade, and New York still retained her monopoly of that. In 1877, however, the receipts of wheat at Baltimore were largely in excess of any former year, and in 1878 a large wheat crop in sections mainly dependent upon the Baltimore roads for transportation gave a new stimulus to the trade. The grain merchants and railroads of that city then turned their attention almost exclusively to wheat, leaving the corn trade to be drawn to other ports; in fact, the elevator and shipping facilities at Baltimore were inadequate for both wheat and corn, and from a strange lack of foresight and enterprise, no additional facilities were supplied for about two years. From this cause the grain trade made a very unfavorable exhibit in 1880. One great injury to the grain trade of Baltimore was the advance of elevator rates by the railroads. This measure was absolutely unjustifiable, and to its evil influence must be attributed much of the decrease for the past two years in the receipts of grain at that port. During the railroad fight of 1876, Philadelphia, like Baltimore, experienced the first important increase in the grain trade, and like Baltimore, the trade was for two years almost exclusively in corn, the receipts of which were very large in 1876, but in the following year there was a falling off of over 6,000,000 bushels. The next year the loss was regained and a considerable additional increase made, but only to be followed by another decrease in 1879, which was in turn followed by 1880 with a large increase, and then by 1881 with a heay falling off. The wheat trade has fluctuated in the same manner. In 1878 there was a large gain over 1877, and in the next year a further increase made, only to be lost in 1880 and 1881. Apparently the trade at that port is unstable, but with improved elevator facilities, it may increase in the future and be less subject to the fluctuations which have marked it in the past. It is only since the latter part of 1879 that New Orleans and Boston have taken any prominence as competitors for the grain trade, but since that year their progress has been quite rapid. Portland is apparently dead as a grain port, the receipts for 1881 being less than for 1871.

As a matter not only of passing interest but of value for reference, the exports of flour, wheat and corn from the principal Atlantic ports are shown for each year since 1871:

BALTIMORE.

Years.	Flour, bbls.	Wheat, bus.	Corn, bus.
1871	503,119	996,140	2,800,861
1872	282,553	88,025	5,157,235
1873	359,566	1,159,097	6,003,618
1874	474,758	3,556,848	5,959,757
1875	453,000	2,046,430	6,989,607
1876	426,094	1,659,861	20,953,724
1877	369,519	5,479,567	19.268,725
1878	590,150	19.610,791	16,953,458
1879	393,748	32,144,349	21,327,419
1880	497,047	33,892,665	14,686,959
1881	413,923	19,676,640	12,735,083

BOSTON.			
1871	344.550	191,486	804,143
1872	217.586	151,860	1,673,769
1873	231,368	486,128	167,670
1874	287,710	948,596	380,454
1875	271.171	744,999	1,550,052
1876	268.093	101,220	4,160,817
1877	231.370	1,612,814	3,182,863
1878	387.771	3,888,609	6,669,138
1879	794,372	5,214,293	7,155,963
1880	868.117	2,598,548	11,654.549
1881	868.210	2,866,592	8,303,270
NEW ORLEANS.			
1871*	------	------	------
1872*	------	------	------
1873	62,841	------	1,119.073
1874	176.745	265.788	1,244,963
1875	74.219	206,399	197,433
1876	93.792	37.102	1.639,756
1877	34.208	105.271	2,824,921
1878	38,042	838,088	6,025.664
1879	40.230	2,796.669	3,909,587
1880	40.404	5,807,738	9,663,388
1881	59,179	4,383,331	7,494,503

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* No record obtainable.

NEW YORK.			
1871	1,618,814	22,027,443	12,318,637
1872	1,182,240	13.263,604	25,332,416
1873	1.661.606	28,753,714	16,168,152
1874	2,185.969	34,771.602	18,647,114
1875	1,968.874	26,232,309	12,980,670
1876	1.954,906	24,945,715	16,470,935
1877	1.571.273	21,795.693	26,759,636
1878	2.811,836	55,170.643	27,870,992
1879	4.230,042	62,342,802	36,451,175
1880	3.903,483	61,882,100	49,239,951
1881	3.691,838	41,343,560	31,437,688
PHILADELPHIA.			
1871	136,145	1,153,167	1,644,779
1872	113,036	412,761	3,462,473
1873	142,376	1,938.370	2,002.368
1874	185.698	3,289,532	2,203.588
1875	160.748	3,302,054	4,601.586
1876	192,433	2,989.704	16,790,691
1877	100,726	2,546.857	10,271,423
1878	190,345	8.923,708	19.595,699
1879	201,818	16,814.572	14,039,228
1880	246.425	12,079,503	17,755,796
1881	176,016	8,913,869	6,549,202
PORTLAND.			
1871	482.523	263.893	810,063
1872	488,764	280,686	806,437
1873	437.553	107,265	14,045
1874	413.775	378.776	119,444
1875	331.041	483,899	66,890
1876	262,847	1,163,350	97,882
1877	45.853	528,523	306,604
1878	60,747	1,266.410	115,542
1879	97,194	1,464,085	104,830
1880	40,586	529,385	958,318
1881	29,335	587,424	143,465

The flour trade of Baltimore with the West Indies was very large some years ago, the vessels carrying sugar to that port returning with flour; but after the failure of Baltimore's sugar trade the flour exports to the West Indies continued to decrease in a little greater proportion than they increased to other countries, and thus in eleven years the exports show a small decline, but having about reached the bottom of the West India business, any increase in the European movement will be more readily noticed in the future. The largest receiver of Baltimore flour is Brazil, for which country a special high grade of flour is made in Baltimore from hard winter wheat. The rapid development of Baltimore's wheat trade during 1879 and 1880 attracted more attention during those years than any other feature of the movement of this cereal from the West to the seaboard during that time, but in 1881 there was a heavy decline mainly due to the enormous shortage of the wheat crop for that year. In 1876 the exports of wheat from Baltimore were 2,600,000 bushels, and in 1880 33,892,665 bushels, or a much more rapid increase than made by any other port.

Since 1876 Boston has made a large increase in her exports of breadstuffs. The exports of flour, which were only 268,092 barrels in 1876, and which as late as 1878 amounted to less than 390,000 barrels, were, for 1880, 868,107 barrels, and for 1881, 868,210 barrels. Much of this heavy gain is due to the abundance of regular steamer lines between that port and Europe. Flour for Europe is now shipped almost wholly by steamers, and the port having the best steam facilities will control the trade; hence the large flour shipments from Boston and New York, where steamer lines are much more numerous than at any of the other Atlantic ports. The wheat and corn trade of Boston began to develop about 1877, since which time it has grown quite rapidly. In 1879 the exports of wheat from New Orleans were but a little more than one-half as great as the shipments from Boston, but in 1880 the exports from Boston were less than one-half the amount from New Orleans. During 1881, and especially during the last half of that year, the exports from New Orleans were very light in sympathy with the decrease in the general movement from the country.

In regard to the exports of grain from New Orleans during the calendar years 1871 and 1872 no record is obtainable. The exports from that port in 1881 were much less than in 1880, the decrease in wheat and corn combined being 3,700,000 bushels. The exports of flour from that port have never amounted to much, and for several years have remained nearly stationary. An important scheme, the feasibility of which will soon be tested, is now under consideration, it being proposed to carry wheat from California to New Orleans by rail and thence ship to Europe. Should this undertaking prove profitable, it would revolutionize the wheat trade of the Pacific Coast and result in the decay of San Francisco's commerce, while at the same time it would build up an immense grain business at New Orleans. It is reported that 2,000 cars are now under construction to be used in carrying wheat from California to New Orleans, and then to be utilized on the return trip as emigrant cars. This scheme may possibly be carried out, although it would appear that the distance was too great for rail transportation.

The total exports of all breadstuffs (flour and meal reduced to bushels) from the principal Atlantic ports for the last ten years were as follows:

	BUSHELS.				
Port—	1872.	1873.	1874.	1875.	1876.
Baltimore	6,783,977	9,049,047	12,059,020	11,411,029	24,918,888
Boston	3,060,094	2,145,364	3,356,250	3,685,231	6,460,786
New Orleans	*	1,433.278	2,394,476	774,927	2.145,818
New York	45,901,493	54,020,056	66,263,946	50,599,710	55,253,686
Philadelphia	4,539,357	4 807,620	6.693,912	8,873.015	22,162,509
Portland	3,030,883	2,437,707	2,818,580	2,649,879	2,850,576
Total	63,315,804	73,893,072	93,586,184	77,993,791	113,792,263

	BUSHELS.				
Port—	1877.	1878.	1879.	1880.	1881.
Baltimore	22,809,300	39,702,633	55,848,889	50,869.597	34,315,215
Boston	7,075,916	13,209,424	16,064,987	18,718,424	15,581.285
New Orleans	3,101,232	7,606,427	7,065,416	15,734,087	12,166.762
New York	62,815,405	107.819,044	123,513,859	132,309,698	91,644,890
Philadelphia	13,692,336	29,748,349	32,411,382	31,056.615	16,326,605
Portland	1,341,536	2,298,471	2,433,686	1,786,281	962,896
Total	114,835,725	200,384,348	237,338,219	250,474,702	170,997,653

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* No record.

The enormous increase in the exports of breadstuffs from the Atlantic ports since 1872 is strikingly shown by these figures. In 1872 the total exports from all the Atlantic ports was a little less than one.half as much as the exports from New York alone in 1880. From 1872 to 1880 the foreign shipments from these six ports increased from 63,315,804 bushels to 250,474,702 bushels, or a gain of 187,000,000 bushels, but in 1881 there was a heavy falling off due to a shortage in our grain crops. The decrease in 1881 was 79,500,000 bushels, or more than the total exports from all the Atlantic ports for any one year from 1871 to 1876, with the exception of 1874. In 1876 the foreign shipments as compared with the preceding year had increased to 113,792,263 bushels, a gain over 1875 of nearly 36,000,000 bushels, of which Baltimore gained 13,500,000 bushels; Boston, 2,800,000 bushels; New Orleans, 1,300,000 bushels; New York, 4,700,000 bushels; Philadelphia, 13,300,000 bushels and Portland, 200,000 bushels. During 1877 the total exports increased only a little over 1,000,000 bushels, although Baltimore, Boston, New Orleans and New York made large gains which were, however, nearly counterbalanced by a decrease of 8 500,000 bushels at Philadelphia and 1,500,000 bushels at Portland. The next year, 1878, was the first in which the exports from the Atlantic ports exceeded 200,000,000 the increase in that year over 1877, being nearly 86,000,000 bushels, and though each of the ports made a considerable gain, yet Boston, New Orleans and Philadelphia were the only ports which had a larger per centage than in 1877. In 1878 New York gained 45,000,000 bushels which was 6,000,000 bushels more than the total exports from Baltimore in the same year. In 1879 Baltimore made an increase over 1878 of 16,000,000 bushels; Boston, 2,800,000 bushels; New York, 15,700,000 bushels; Philadelphia, 2,700,000 and Portland 100,000 bushels, while at New Orleans there was a decrease of 600,000 bushels. The last of the ten years under review shows some important changes in the relative position of the different ports. The total exports from these ports in 1881 was 79,500,000 bushels less than in the preceding year. Of this loss 41,000,000 bushels were at New York, 16,500,000 bushels at Baltimore, 14,700,000 bushels at Philadelphia, 3,600,000 bushels at New Orleans, 3,200,000 bushels at Boston and 800,000 bushels at Portland. A few years ago Portland gave fair promise of becoming an important grain port, but the receipts and exports there have so steadily declined of late that the entire business of 1881 did not amount to 1,000,000 bushels. The per centage of the total from the six ports for each year, since 1872 will show in the best form, the relative increase or decrease at each. The percentages were as follows:

Years	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.
Baltimore	10.71	12.25	12.89	14.63	21.89	23.35	19.81	23.53	20.31	20.06
Boston	4.83	3.90	3.59	4.73	5.68	6.16	6.59	6 76	7.47	9,10
New Orleans	----	1.94	2.56	0.99	1 89	2.70	3 80	2.97	6.28	7.11
New York	72.50	73.11	70,80	64.88	48.56	54.70	53.80	52.05	52.83	53.50
Philadelphia	7.17	6.51	7.13	11.38	19.48	11.92	14.85	13.66	12.40	9.56
Portland	4.79	3.29	3,01	3.40	2,50	1,17	1,15	1.03	0,71	0.56

Beginning in 1872 with 10.71 per cent. of the entire exports of breadstuffs from the Atlantic ports, Baltimore steadily gained till 1877 when her proportion was 23.35 but in 1878 there was a decline to 19.81 per cent., followed in 1879 by 23.53 and then came a decrease in 1880, and a very small decrease in 1881, so that Baltimore's percentage for 1881 was 20.06. In ten years Baltimore has increased her percentage from 10.71 to 20.06, while during the same time Boston has increased from 4.83 to 9.11; New Orleans from 1.94 (in 1873) to 7,11; Philadelphia, from 7.17 to 9.56; while during the same period New York's percentage has declined from 72.50 to 53.50, and Portland's from 4.79 to 0.56, Notwithstanding this decrease in her percentage, New York still maintains her position as the outlet for more than one-half of the exports of breadstuffs from the United States Atlantic ports. For the past three years there has been a small gain in New York's percentage, the proportion in 1879 being 52,05, then 52.83 in 1880, and then 53.50 in 1881. The highest percentage at New York was in 1873, amounting to 73.11, while the lowest was 48.56 in 1876. Probably New York will never again monopolize three-fourths of the grain exports as in former years, but there is little danger of her ever losing her present position. The Erie Canal has enabled her to keep a firm hold upon this trade, and its influence in the future will doubtless be even greater than in the past. So long as the Erie Canal is in existence New York will at certain seasons of the year have a great advantage over any rival port. In 1872 Boston's percentage was 4.83, but in 1873 the figures has dropped to 2.90, from which point there has been a steady upward move without a single halt. Philadelphia has good cause to be alarmed over the gradual decay of her grain trade. In 1872 the percentage at that port was 7.17, in 1873 6.51, and then there was quite a rapid increase until 1876, when the percentage was 19.98, or only 2.0 less than Baltimore's, while in 1881 the proportion was 9.56—just about one-half what it was in 1876, and nearly 11 per cent. less than Baltimore's. In 1876 Philadelphia's percentage was 19.98, and Boston's 5.66, while in 1881 the former had 9.56 and the latter 9.11. Portland has almost completely dropped out of the grain business, the percentage for that port last year being only 0.56, the smallest on record. The grain trade at that port is almost dead, and in all probability it will never revive again.

The percentage of the total, as given in the above figures, must not be confounded with the rate of increase or decrease at each port, which has been as follows:

Ports—		Increase.	Dec.
Baltimore	per cent.,	505.8	----
Boston	"	509.1	----
New Orleans (from 1873 to 1881)	"	848.9	----
New York	"	199.6	----
Philadelphia	"	359.6	----
Portland	"	----	68.3

The total increase or decrease in bushels at each port in 1881, as compared with 1872, was as follows:

Ports—		Increase.	Decrease.
Baltimore	bush.,	27,531,238	----
Boston	"	12,521,191	----
New Orleans (from 1873 to 1881)	"	10,733,484	----
New York	"	45,743,397	----
Philadelphia	"	11,787,248	----
Portland	"	----------	2,067,987

In ten years Baltimore has gained 3,000,000 bushels more than Philadelphia combined, while during the same time New York has gained within 5,000,000 bushels as much as Boston, Baltimore and Philadelphia.

WESTERN MANUFACTURERS' MUTUAL INSURANCE CO.

The Western Manufacturers' Mutual Insurance Co., 113–117 Monroe St., Chicago, Ill., issued the following semi-annual statement on July 1:

ASSETS.		
U. S. bonds	$ 5,162.50	
Minnesota State bonds	5,160.96	
Cook County, Ill., bonds	6,095.04	
Cash in bank	11,178.63	
Assessments in course of collection	19,732.54	
Premiums in course of collection	1,086.94	
Due from other companies	274.40	
Office furniture	709.60	
Deposit notes, subject to assessment, (net value)	306,141.78	
Total Assets		$355,542.39
LIABILITIES.		
Losses not due	$ 1,470.32	
All other liabilities	2,181.79	
		3,652.11
Surplus over all liabilities		$351,890.28
Face of deposit notes, constituting the basis for assessment	$459,348.89	

Respectfully yours,
P. A. MONTGOMERY, Secretary.

Many elevators all through the country are putting in improved machinery and overhauling generally.

WHEAT.

Wheat is a plant of the genus *Triticum*. A great number of species of this genus has been found, of which *Triticum repens*, known as couch grass, a native of Great Britain, is the most common, but its seeds are of no value. The cultivated forms are generally classified under the name *Triticum vulgare*. Some botanists apply the term *Triticum Hybernum* to the bearded, and *Triticum Pestivium* to the beardless species, while others give these names respectively to the winter and summer varieties. There are, however, so many intermediate forms of these species that their classification is almost a matter of speculation. A number of varieties, on account of their very compact spikes, have been classed under the name of *Triticum compactum*. Another species, *Triticum compositum*, known as mummy wheat, is so named probably on account of the ear being composed of branches sometimes to the number of ten or twelve. A single seed of this wheat has been known to produce fifty or sixty ears, and a single ear sometimes contains one hundred and fifty grains. *Triticum turgidum* is another group of varieties with glumes remarkably large and always armed. Other varieties, with a long, loose, nodding spike, glumes long and bearded, are known by the name of *Triticum Polonicum*. The stems of this plant have been known to attain the length of six feet. *Triticum durum*, or horny wheat, is a very hard variety, with remarkably long arms and small elongated grains. This wheat is cultivated extensively in the vicinity of the Mediterranean, yielding a good crop on very poor soil. *Triticum spelta*, or spelt, is a species distinct from common wheat, and is supposed to be the *Zea* of the Greeks, and the *Far* of the Romans. Its grain is of little value, but grows on poor soils, and is cultivated in Switzerland at an elevation where common wheat would not grow, and is the food of the poorer classes.

SHRINKAGE OF NEW CORN.

The superintendent of the Pennsylvania Experimental Farm states the shrinkage of corn between the time it was husked and entirely dry—variety not stated, but presumably of the Eastern flint variety—as follows: In the fall of 1870, Thomas M. Harvey put 400 pounds of sound corn (ears) in a lathed box to test its shrinkage. It was weighed and boxed Nov. 18, quite ripe and dry. This was late for husking, you will notice. Nov. 22, one box was shelled out and made 5 bushels, 27½ quarts by measure, or 322 pounds, 6 ounces, and averaged 551 ounces to the bushel; cobs weighed 75 pounds, 8½ ounces, making the total loss 2 pounds, 1½ ounces. The next box was shelled March 30, following, and made 5 bushels 9 ounces, or 282 pounds, 8 ounces, averaging 56 pounds, 8 1-6 ounces per bushel; the cobs weighed 54 pounds and 10 ounces, making a loss of 46 pounds, 14 ounces, or 7½ per cent. on the grain, and a loss of 11½ per cent. of corn and cobs. This result would have been quite different if the boxes had been filled with early-husked, large-cobbed corn, I have had larger ears that lost 50 per cent. from the time they were first husked till thoroughly dried. An experiment with unshelled corn, by another party, resulted as follows: 1875, Nov. 13, put in crib 55 bushels; weight, 1,976 pounds; 15th, do., weight, 1,980 pounds; 17th, do., weight, 1,970—35⅛ pounds per bushel when cribbed. Aug. 3, 1876, it weighed out of crib, 31½ bushels, or 1,070 pounds for each draft put in crib. Each bushel of ears now weighed 34¾ pounds, making a loss in bulk of 18.6 per cent., and in weight, 22.6 per cent.

NEW YORK ELEVATORS.

The great grain elevators and warehouses in and around New York city provide storage for 22,800,000 bushels. Their capacities are as follows: New York Central, 2,300,000 bushels; New York, Lake Erie and Western Railroad, Jersey City, 1,500,000 bushels; Pennsylvania Railroad, Jersey City, 1,500,000 bushels; Dow's elevators, Brooklyn, 2,500,000 bushels; Hazeltine & Annan's elevators, Brooklyn, 2,500,000 bushels; Grain Warehousing Association, Brooklyn, 6,000,000 bushels; Robinson's stores, Erie Basin, 2,800,000 bushels; Pinto's stores, Brooklyn, 1,000,000 bushels; Woodruff & McLean's stores, Brooklyn, 1,500,000 bushels; other elevators in New York and Brooklyn, 2,200,000 bushels.

STATISTICS OF THE SIX PRINCIPAL CEREAL CROPS OF THE UNITED STATES IN 1881.

The Bureau of Agriculture at Washington, gives the following figures as the yield of the six principal cereal crops in the year 1881:

CORN—1881.

States.	Bushels.	Yield	Acres.	Price.	Value.
Maine	1,064,000	34.0	31,300	$ 91	$ 968,240
New Hampshire	1,262,000	34.2	36,900	87	1,097,940
Vermont	1,990,000	35.7	55,800	86	1,711,400
Massachusetts	1,406,000	25.1	56,000	88	1,237,280
Rhode Island	327,000	27.0	12,100	90	294,300
Connecticut	1,427,000	25.5	55,900	80	1,141,600
New York	20,085,000	26.4	761,500	77	15,465,450
New Jersey	7,829,000	23 2	336,800	77	6,028,330
Pennsylvania	34,599,000	25.2	1,374,500	75	25,949,250
Delaware	2,940,000	14.4	204,100	60	1,764,000
Maryland	16,277,000	24.2	671,400	64	10,417,280
Virginia	27,200,000	15.0	1,800,200	71	19,312,000
North Carolina	26,977,000	11.7	2,307,600	79	21,311,830
South Carolina	8,809,000	6.7	1,308,900	99	8,720,910
Georgia	19,745,000	8.3	2,388,700	97	19,152,650
Florida	3,170,000	8 8	359,700	1 00	3,170,000
Alabama	20,250,000	9.9	2,035,700	97	19,642,500
Mississippi	17,646,000	11 0	1,606,200	96	16,940,160
Louisiana	9,693,000	13.0	745,600	98	9,499,140
Texas	33,377,000	11.9	2,803,700	99	33,043,230
Arkansas	21,028,000	14.8	1,425,600	94	19,766,320
Tennessee	36,232,000	12.4	2,915,300	72	26,087,040
West Virginia	12,980,000	22.7	571,100	74	9,605,200
Kentucky	51,624,000	17.0	3,042,400	70	36,136,800
Ohio	79,760,000	25.4	3,134,400	61	48,653,600
Michigan	25,068,000	28.0	894,000	63	15,792,840
Indiana	79,618,000	21.8	3,657,800	60	47,770,800
Illinois	176,733,000	19.4	9,096,600	58	102,505,140
Wisconsin	29,040,000	27.6	1,054,000	54	15,681,600
Minnesota	16,252,000	32.0	508.500	53	8,613,560
Iowa	173,289,000	25.8	6,710,200	44	76,247,160
Missouri	93,069,000	16.5	5,650,100	65	60,494,850
Kansas	76,377,000	18.2	4,196,500	58	44,298,660
Nebraska	58,913,000	27.4	2,149,200	39	22,976,070
California	2,633,000	27.2	96,700	78	2,053,740
Oregon	101,000	20.2	5,000	75	75,750
Nevada	13,000	24.8	525	1 00	13,000
Colorado	352,000	25.5	13,800	1 05	369,600
Territories	5,761,000	32.2	178,700	95	5,472,950
Total	1,194,916,000	18.6	64,262,025	63.6—	$759,482,170

BARLEY—1881.

States.	Bushels.	Yield	Acres.	Price.	Value.
Maine	244,000	22.0	11,100	$ 85	$ 207,400
New Hampshire	80,000	22.2	3,600	82	65,600
Vermont	285,000	25.4	11,200	87	247,950
Massachusetts	82,000	25.6	3,200	95	77,900
Rhode Island	18,500	23.1	800	97	17,945
Connecticut	12,300	19.8	620	1 00	12,300
New York	8,412,000	23.6	355,900	93	7,823,160
New Jersey	4,200	16.8	250	97	4,074
Pennsylvania	480,000	21.1	22,700	95	456,000
Delaware	----------	------	----------	--------	----------
Maryland	6,200	25.8	240	1 10	6,820
Virginia	14,750	15.5	950	1 10	16,225
North Carolina	2,500	10.0	250	1 15	2,875
South Carolina	16,850	14.0	1,200	1 20	20,220
Georgia	22,000	14.7	1,500	1 25	27,500
Florida	----------	------	----------	--------	----------
Alabama	5,780	9.6	600	1 37	7,919
Mississippi	----------	------	----------	--------	----------
Louisiana	----------	------	----------	--------	----------
Texas	106,000	19.3	5,500	90	95,400
Arkansas	----------	------	----------	--------	----------
Tennessee	36,000	13.8	2,600	1 06	38,160
West Virginia	10,250	20.5	500	90	9,225
Kentucky	344,000	17.0	20,200	89	306,160
Ohio	1,122,000	16.4	68,300	99	1,110,780
Michigan	1,249,000	24.3	51,500	93	1,161,570
Indiana	385,000	26.0	14,800	1 05	404,250
Illinois	754,000	15.5	48,800	86	648,440
Wisconsin	5,296,000	24.5	215,800	84	4,448,640
Minnesota	4,145,000	32.5	127,700	71	2,942,950
Iowa	3,498,000	20.8	167,800	74	2,588,520
Missouri	101,000	15.8	6,400	98	98,980
Kansas	243,000	12.3	19,700	75	182,250
Nebraska	1,270,000	8.9	142,200	55	698,500
California	10,146,000	18.9	537,000	77	7,812,420
Oregon	745,000	25.7	29,000	58	432,100
Nevada	450,000	21.4	21,000	1 20	540,000
Colorado	88,000	18.0	4,900	1 15	101,200
Territories	1,487,000	21.3	69,700	84	1,249,080
Total	41,161,330	20.9	1,967,510	82.3—	33,862,513

WHEAT—1881.

States.	Bushels.	Yield	Acres.	Price.	Value.
Maine	617,000	14.1	43,700	$1 56	$962,520
New Hampshire	175 000	15.2	11,500	1 56	273,000
Vermont	378,000	18.0	21,000	1 47	555,660
Massachusetts	19,000	15.8	1,200	1 50	28,500
Rhode Island	260	10.4	25	1 50	390
Connecticut	39,000	17.7	2,200	1 42	55,380
New York	10,844,000	13.9	780,200	1 37	14,856,280
New Jersey	2,018,000	12.7	158,700	1 43	2,885,740
Pennsylvania	18,797,000	12.5	1,503,800	1 34	25,187,980
Delaware	1,044,000	10.1	102,900	1 40	1,461,600
Maryland	7.213,000	11.7	618,300	1 35	9,737,550
Virginia	7,165.000	8.0	892,100	1 33	9,529,450
North Carolina	4,579,000	6.9	662,200	1 49	6,822,710
South Carolina	988,000	5.7	173,900	1 65	1,630,200
Georgia	2,933,000	6.1	477,200	1 63	4,780,790
Florida	480	5.1	95	1 65	792
Alabama	1,479.000	6.6	222,500	1 58	2.336,820
Mississippi	197,000	5.6	34 900	1 60	315,200
Louisiana	5,350	3.3	1,600	1 50	8,025
Texas	3,339,000	12.7	263.200	1 40	4,674,600
Arkansas	1,017,000	5.2	196,100	1 50	1.525,500
Tennessee	6,408,000	6.1	1,055,400	1 36	8,714,800
West Virginia	4,413,000	10.5	420,600	1 25	5,516,285
Kentucky	8,625,000	7.5	1,156,600	1 31	11,298,750
Ohio	38.520.000	13.3	2,902,100	1 29	49.690,800
Michigan	21,220,000	10.9	1,950,200	1 25	26.525,000
Indiana	31,353,000	10.8	2,903,100	1 27	39,818,310
Illinois	26,822,000	8.2	3,285,200	1 22	32,722,840
Wisconsin	17.987,000	11.3	1,595,300	1 19	21,404,530
Minnesota	35,952,000	11.4	3,152,100	1 06	38,109,120
Iowa	18,248,000	6.6	2,775,500	1 06	19,342.880
Missouri	20,399.000	8.6	2,382,700	1 19	24,274,810
Kansas	19.909,000	9.1	2,198,000	1 05	20,904 450
Nebraska	13,840,000	7.1	1,958,500	97	13,424,800
California	28,406,000	12.0	2,367,200	1 03	29,258,180
Oregon	12,673,000	17.2	738,600	88	11,152,240
Nevada	48,000	14.5	3,300	1 20	57,600
Colorado	1,310,000	19.8	66,000	1 33	1,742,300
Territories	11,300,000	17.9	631,200	1 08	12,204,000
Total	380,280,090	10.1	37,709,020	1 19+	453,790,427

RYE—1881.

States.	Bushels.	Yield	Acres.	Price.	Value.
Maine	39,000	15.0	2,600	$1 07	$ 41,730
New Hampshire	34,000	10.6	3,200	1 05	35,700
Vermont	104,000	16.8	6,200	1 02	106,080
Massachusetts	449,000	16.3	27,600	1 12	502,880
Rhode Island	16,000	11.4	1,400	1 13	18,080
Connecticut	451.000	14.9	30,300	98	441,980
New York	2,820,000	12.0	234,600	93	2,622,600
New Jersey	1,040,000	10.8	96,600	97	1,008,800
Pennsylvania	4,050,000	10.5	386,600	96	3,888,000
Delaware	6,500	8.1	800	87	5,655
Maryland	285,000	10.8	26,300	1 00	285,000
Virginia	304,000	6.4	47,700	92	279,680
North Carolina	376,000	6.2	60,600	97	364,720
South Carolina	32,000	4.5	7,100	1 60	51,200
Georgia	144,000	6.6	21,900	1 40	201,600
Florida	3,200	4.9	650	1 60	5,120
Alabama	31,000	5 7	5,400	1 43	44,330
Mississippi	5,250	6.2	850	1 40	7,350
Louisiana	235,000	8.7	27,100	1 40	329,000
Texas	42,000	14.0	3,000	1 20	50,400
Arkansas	22,000	6.7	3,300	1 10	24,200
Tennessee	182,000	5.6	32,500	1 00	182,000
West Virginia	165,000	9.8	16,900	96	158,400
Kentucky	694,000	11.1	62,300	99	687,060
Ohio	392,000	13.1	29,900	92	360,640
Michigan	271,000	12.5	21,700	91	246,610
Indiana	249,000	10.2	24,400	93	231,570
Illinois	2,775,000	15.5	179,300	91	2,525,250
Wisconsin	2,353,000	14.3	164,500	90	2,117,700
Minnesota	193,000	14.7	13,100	74	142,820
Iowa	1,242,000	11.4	109,200	80	993,600
Missouri	458,000	11.8	38,900	85	389,300
Kansas	467,000	12.2	38,200	74	345,580
Nebraska	424,000	11.1	38,200	71	301,040
California	209,000	11.1	18,800	1 00	209,000
Oregon	18,000	20.0	900	67	12,060
Nevada	----------	------	----------	--------	----------
Colorado	28,000	20.0	1,400	97	27,160
Territories	96,000	18.8	5,100	87	83,520
Total	20,704,950	11.6	1,789,100	93.3+	19,327,415

OATS—1881.

States.	Bushels.	Yield	Acres.	Price.	Value.
Maine	2,369,000	28.9	82,100	$0 52	$1,231,880
New Hampshire	1.030,000	34.7	29,700	52	535,600
Vermont	3,345,000	33.6	99,500	50	1,672,500
Massachusetts	703 000	30.4	23,100	65	456,950
Rhode Island	164,000	29.3	5.600	67	109,880
Connecticut	1,038,000	28.3	36,700	56	581,280
New York	38,160,000	28.8	1,324,700	48	18,316,800
New Jersey	4,052,000	30.7	131,800	49	1,985,480
Pennsylvania	38,579,000	31.8	1,212 700	48	18,517,920
Delaware	316,000	18.5	17,100	45	142,200
Maryland	1,823,000	19.3	94,600	48	875,040
Virginia	4,331,000	7.9	545,800	53	2,295,430
North Carolina	4,081,000	8.1	506,300	62	2,530,220
South Carolina	3,098,000	11.0	281,900	97	3,005,660
Georgia	5,566,000	9.1	612,300	87	4,842,420
Florida	392,000	8.2	47,800	92	360.640
Alabama	3,073,000	9.1	337,200	89	2,734,970
Mississippi	2,185,000	10.3	211,700	85	1,857,250
Louisiana	364,000	13.8	26,400	89	323,960
Texas	8.324,000	26 8	311,100	61	5,077,640
Arkansas	2,337,000	13.8	168,900	71	1,659,270
Tennessee	6,726,000	14.2	472,100	56	3.766,560
West Virginia	2,098,000	16.8	124,800	47	986,060
Kentucky	6,534,000	16.3	400,500	47	3,070,980
Ohio	25,009,000	27.7	902,300	44	11,003,960
Michigan	18,057,000	32.7	552,600	46	8,306,220
Indiana	15,711,000	23.0	683,000	42	6,598,620
Illinois	66,094,000	33.4	1,979,400	43	28,420,420
Wisconsin	31,204,000	28.6	1,092.200	40	12,481,600
Minnesota	23,760,000	35.6	667,700	43	10,216,800
Iowa	42,434,000	26.2	1,618.700	34	14,427,560
Missouri	22,783,000	23.8	959,200	45	10,252,350
Kansas	8,754,000	19.8	441,700	40	3,501,600
Nebraska	6,976,000	21.4	325,300	37	2,581,120
California	1,548,000	23.1	67,100	60	928 800
Oregon	5,278,000	34.6	152,400	43	2,269,540
Nevada	190,000	31.7	6,000	90	171,000
Colorado	771,000	27.4	28,100	81	624,510
Territories	7,224,000	28.7	251,500	62	4,478,880
Total	416,481,000	24.7	16,831,600	46.4—	193,189,970

BUCKWHEAT—1881.

States.	Bushels.	Yield	Acres.	Price.	Value.
Maine	420,000	20.8	20,000	$ 62	$ 260,400
New Hampshire	92,000	20.0	4,600	75	69,000
Vermont	341,000	20.1	17,000	72	245,520
Massachusetts	73,000	13.3	5,500	75	54,750
Rhode Island	1,350	10.8	125	90	1,215
Connecticut	146.000	13.0	11,200	95	138,700
New York	3,338,000	11.9	279,600	82	2,737,160
New Jersey	312,000	9.0	34,700	1 00	312,000
Pennsylvania	2,466,000	10.1	244,000	96	2,367,360
Delaware	5,500	13.7	400	98	5,390
Maryland	95,000	10.0	9,500	90	85,500
Virginia	153,000	9.7	15,800	73	111,690
North Carolina	52,000	9.6	5,400	71	36,920
South Carolina	----------	------	----------	--------	----------
Georgia	----------	------	----------	--------	----------
Florida	----------	------	----------	--------	----------
Alabama	----------	------	----------	--------	----------
Mississippi	----------	------	----------	--------	----------
Louisiana	----------	------	----------	--------	----------
Texas	----------	------	----------	--------	----------
Arkansas	----------	------	----------	--------	----------
Tennessee	43,000	8.3	5,200	84	36,120
West Virginia	325,000	10.3	31,500	81	263,250
Kentucky	10,500	9.5	1,100	74	7,770
Ohio	183,000	8.4	21,900	96	175,680
Michigan	468,000	14.5	32,200	90	421,200
Indiana	79,000	11.0	7,200	99	78,210
Illinois	148,000	7.6	19,500	99	146,520
Wisconsin	386,000	12.0	32,200	84	324,240
Minnesota	46,000	12.4	3,700	83	38,180
Iowa	167,000	12.4	13,900	93	155,310
Missouri	66,000	12.5	5,300	98	64,680
Kansas	40,000	9.5	4,200	99	39,600
Nebraska	17,000	8.1	2,100	97	16,490
California	6,100	17.9	340	1 00	6,100
Oregon	6,750	15.0	450	1 00	6,750
Nevada	----------	------	----------	--------	----------
Colorado	----------	------	----------	--------	----------
Territories	----------	------	----------	--------	----------
Total	9,486,200	11.4	828,815	86.5	8,205,705

GRAIN CHUTES.

Washington Territory has taken an idea from the modes used by lumbermen in sliding their material down mountains and over dams, and introduced a novelty in the apparatus for getting their grain from the hilltops to the banks of the Snake river, for transportation. Owing to the rugged and precipitous character of the hills their roads are impracticable. In order to convey the grain in an expeditious and economical manner to the landing, pipes have been laid, constructed of wood, along the face of the mountain, fully half a mile in length. The grain is sent down in bulk and resacked at the warehouse. There are four chutes in all, but one is not used on account of a failure in making a landing near enough to receive the grain. The cost of bringing the grain from the top of the hill to the boat is $2.50 per ton.

GRAIN SPECULATION NOT A CRIME.

Not a few there are who take supreme delight in meddling with their neighbors' business, in fact, they are never happy except when they are making others perfectly miserable in endeavoring to render them supremely felicitous. Such people in politics have given rise to wars and turmoils without number, in fact it is open to question if two-thirds of the wars whose records stain the pages of history would have arisen without them. What homes ruined, what families separated, what nations devastated, what people lost their liberty through this dreadful prepensity, may never be told until the last great accounting day.

These people are very solicitous that wheat gambling, as they call it, should be put down, and they are moving heaven and earth to have it made illegal to buy or sell except on the platform that they favor. They are now besieging the New York Legislature, and if successful there it will not be long till the advance guard finds its way to California, and till it will be heard knocking at the doors of the capitol to put a stop to the call system in this city.

And preparatory to their assaults on legislative bodies they have taken action so as to provide minor annoyances for they who will conduct their business in their own way. In Pittsburg, recently, they indicted a firm of brokers as gamblers.

The defendants—Bryan, McMullen & Gurlien, grain brokers—were indicted for keeping and maintaining a gambling house, under the act of 1860, which refers to games of chance, such as faro and keno, and the methodr generally adopted by common gamblers. The testimony for the prosecution showed that the business in which they were engaged was about the same as putting up margins on oil and stocks. They dealt in "options," "futures," and "puts," and "calls." Considerable interest was manifested in the case, from the fact that it involved the very important question whether the grain brokerage business, or any other similar business of a speculative character, is legitimate. The judge, in charging the jury, merely reviewed the testimony, and left the question of speculation in stocks of any kind, os options, before the jury. The verdict, as delivered, decided that the defendants were not common gamblers.

Why it should be called a crime to offer to pay $1.60 for wheat in September any more than in May, it passes our comprehension to discover. Of course, the man who offers it expects to buy it for less when he may have to pay more; but such contingencies arise in all business. The common sense of the world will soon laugh the moral mongers out of court.—*S. F. Journal of Commerce.*

A Workman at the Pillsbury Elevator, at Minneapolis, Minn., L. E. Anderson by name, was killed June 24. He was lying on the track behind a freight car, which was driven back by some other cars attached to an engine. The car passed over him, crushing his legs and cutting off his left arm. He lived but a very short time after the accident.

Grain Commission Cards.

HEALD & CO.,
Flour & Grain Commission Merchants.
14 S. HALLIDAY ST., BALTIMORE, MD.
REFERENCES:
Citizens' National Bank, Baltimore; Mechanics' National Bank, Baltimore; Jno. A. Hambleton & Co., Bankers, Baltimore.
WANTED—Responsible parties to solicit grain for us in the West Liberal Commissions.

ESTABLISHED 1866.
J. VAN WINT,
Grain and Flour Agent,
ANTWERP, BELGIUM.
References and Cable Codes Furnished.

ESTABLISHED 1858.
GILMAN, CHENEY & CO.,
Commission Merchants,
—FOR THE SALE OF—
GRAIN, HAY, FEED, ETC.,
102 State Street, - - Boston, Mass.
Liberal Advances on Consignments.

WARNER & WILBUR,
General Commission Merchants
Room 28, Metropolitan Block, Chicago.
Refer by permission: B. L. Smith, Cashier Hide and Leather National Bank, Chicago, Ill.; Col. E. A. Bowen, President First National Bank, Mendota, Ill.; Chas. C. Macy, Cashier Farmers' National Bank, Hudson, N. Y.; Wm. Seymour, Cashier First National Bank, Hudson, N. Y.; Fred'k Hill, Cashier Tanners' National Bank, Catskill, N. Y., or O. P. Collier, President First National Bank, Battle Creek, Mich.

CORNELIUS DORR.] **Established 1860.** [GEORGE A. ALLISON.
DORR, ALLISON & CO.,
FLOUR AND GRAIN
Commission Merchants,
No. 3 COMMERCIAL ST., BOSTON.
Liberal advances made on consignments. Correspondence solicited.

ESTABLISHED 1854.
CULVER & CO.,
GRAIN RECEIVERS
—AND—
Commission Merchants,
Nos. 122 and 124 Washington Street,
CHICAGO.
Solicit Consignments and Orders for Future Delivery.

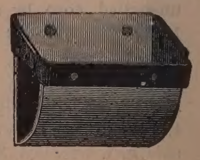
J. M. BERRY,
Broker and Commission Merchant
IN GRAIN, FLOUR AND PROVISIONS,
AUGUSTA, GA.
REFERENCE—National Bank of Augusta, National Park Bank, N. Y.

Security and Economy.
Western Manufacturers'
MUTUAL INSURANCE COMPANY
P. A. MONTGOMERY, Secretary.
Western Department Mutual Underwriters' Union.
P. A. MONTGOMERY, GEN. AGT.
Office, Nos. 113, 115 and 117 Monroe Street, Chicago.
EMBRACING
Western Manufacturers' Mutual Insurance Co., Chicago.
Jesse Spalding, President; P. A. Montgomery, Sec'y.
Illinois Mutual Insurance Company, Alton, Ill.
John Atwood, President; H. G. McPike, Secretary.
Manufacturers' & Merchants' Mut. Ins. Co., Rockford, Ill.
H. W. Price, President; Geo. S. Roper, Secretary.
Corn City Mutual Fire Insurance Co., Toledo, Ohio.
D. Robison, Jr., President; G. E. Detwiler, Secretary.
Van Wert County Mutual Fire Ins. Co., Van Wert, O.
J. M. C. Marble, President; M. L. Purmort, Secretary.
Merchants' & Manufacturers' Mut. Ins. Co., Mansfield, O.
L. J. Tracy, President; M. E. Douglas, Secretary.
Delaware Mutual Fire Insurance Co., Delaware, Ohio.
R. W. Reynolds, President; Chas. O. Little, Secretary.
Capital City Mutual Fire Insurance Co., Columbus, O.
W. E. Guerin, President, F. Schwan, Secretary.
ASSETS OVER $3,000,000.
These Companies co-operate throughout the Northwest, emyloying the same inspectors and dividing expenses. Are purely mutual; all assets are owned and controlled by the policy holders. All risks carefully examined by salaried inspectors, and rated on fixed schedules, thereby avoiding unjust apportionments. Experience has proved properly conducted Mutual Companies to be the safest and most economical.
REFERENCES:
We take pleasure in referring to the following well-known mill owners and firms, members of this Company:
Clinton Briggs, Star and Crescent Mills, Chicago, Ill.
H. C. Cole & Co., Cole's Mills, Chester, Ill.
M. G. & N. Sage, Harvest Queen Mills, Elkhart, Ind.
F. Goodnow & Co., Salina Mills, Salina, Kan.
Page, Norton & Co., Inter Ocean Mills, Topeka, Kan.
F. W. Stock, City Mills, Hillsdale, Mich.
Dewey & Stewart, Owosso City Mills, Owosso, Mich.
Hicks Brown & Co., Brown's Mills, Mansfield, Ohio.
Polar Star Mill Co., Polar Star Mills, Faribault, Minn.
J. S. Pillsbury, Anchor Mills, Minneapolis, Minn.
Red Wing Mill Co., Red Wing Mills, Red Wing, Minn.
E. O. Stannard & Co., Eagle Mills, St. Louis, Mo.
Nunnemacher Co., Star Mills, Milwaukee, Wis.
Alex. Syme, City Mills, Menasha, Wis.
Jno. Schuette, Oriental Mills, Manitowoc, Wis.
Correspondence solicited from Manufacturers having
GOOD RISKS.

First Premium at the
Millers' International Exhibition.
SPECIAL FEATURES.
Seamless Round Corners, Shovel Edge, Curved Heel, Carries More, Runs Easier, Empties Clean, Lasts Longer, is nearer Perfection than any other bucket made.
WHAT USERS SAY OF IT.
We are much pleased with the "Salem" bucket—have over six thousand in our mill, and pronounce them the best we ever used.
W. TROW & Co., Madison, Ind.
We consider the "Salem" the *best in the market.* What better testimonial can you have than the size and frequency of our orders.
LINK BELT MACHINERY Co., Chicago.
Your "Salem" buckets are satisfactory in every respect. Shall want more soon.
WM. LEA & SONS, Wilmington, Del.
We have over four thousand "Salem" buckets in our Patapsco Mill B, and they are giving entire satisfaction. We think they are the best bucket in the market.
C. A. GAMBRILL MFG. Co., Baltimore.
W. J. Clark & Co., Sole Mfrs., Salem, O
New York Office and Salesroom, 7 & 9 Cliff St.

THE COMMON-SENSE
Automatic Corn Sheller.
The only self-adjusting automatic sheller in the market. It possesses more advantages than any other known machine—takes less power to operate—and adjusts itself to the size of Ear Corn. Will shell more corn, and that too without splitting the cob; leaves little or no corn on the cob; grinds and breaks less of the kernels; is less liable to be broken (by having some hard substance pass through the sheller) on account of the flexibility of segments and safety pins in plate—which are of wood and can easily be replaced; works right or left, as may be required.
The sheller represented herein is made entirely of Iron; is well proportioned and built in a most thorough manner; can be adjusted while being operated, by means of the handwheel on the rods connected with the lever supporting the center lift: the case and cylinder are both made of segments; the case staves have a spring to hold the bottom close enough to catch any corn which may be on the cob before leaving the machine, the spring yielding to a large cob, also being close enough for the smaller ones.
Six Sizes Made. Send for Prices.
COLUMBIAN IRON WORKS,
CHAS. W. PARKER, Proprietor,
325 to 331 Desplaines St., CHICAGO, ILL.

SUBSCRIBE FOR
"The American Elevator and Grain Trade,"
ONLY ONE DOLLAR PER YEAR.
Address MITCHELL BROS. CO., 184 and 186 Dearborn St., Chicago.

RIVET (MILL) BUCKET.

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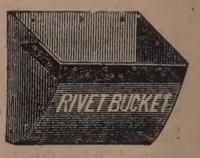
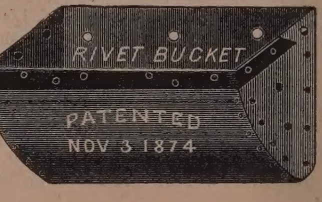
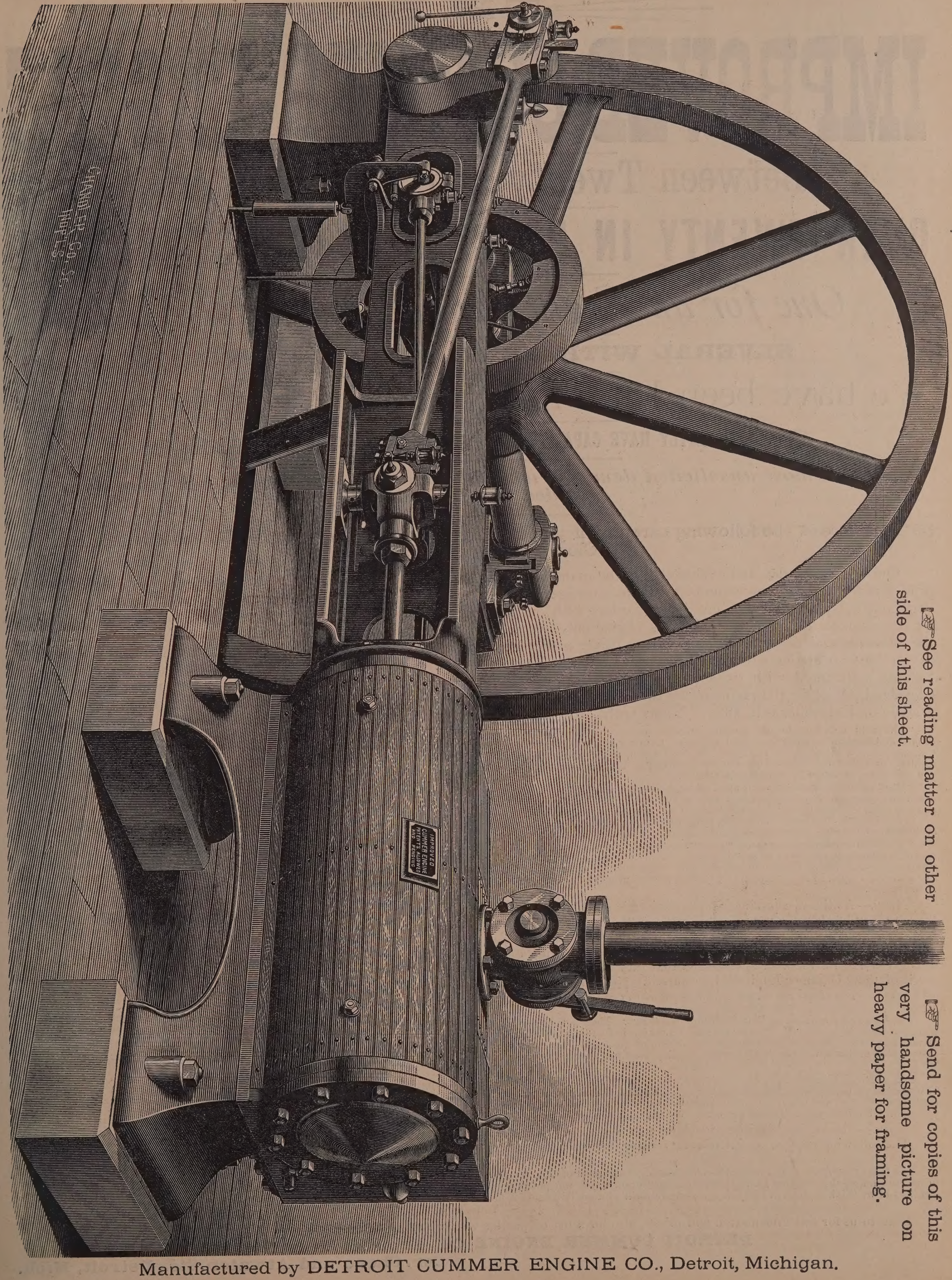


CORN ELEVATOR BUCKET.


The RIVET BUCKET CO.,
61 MARKET ST., CHICAGO.
(Established 1874.)
Furnishes all grain-handling machinery of latest kinds as well as their own well-known specialties.
Orders solicited.

THE IMPROVED CUMMER ENGINE.



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☞ Send for copies of this very handsome picture on heavy paper for framing.

Manufactured by DETROIT CUMMER ENGINE CO., Detroit, Michigan.

THE

IMPROVED CUMMER ENGINE

Between Twenty and Thirty Ordered.

OVER TWENTY IN PROCESS OF CONSTRUCTION.

One for an Eight Hundred Barrel Mill.

SEVERAL WITH NEARLY EQUAL CAPACITY.

We have been Running Night and Day for Months.

WE WILL SHORTLY HAVE CAPACITY FOR PRODUCING ONE CUMMER ENGINE PER DAY.

The almost unsolicited demand, without Advertising or Agents, has more than exceeded our full capacity.

☞Please read the following carefully if you are interested in a very Simple, Reliable, Economical and Closely Governed Machine.

Our works are devoted exclusively to the manufacture of the Cummer Engine. Our tools are especially adapted to their production. We are now manufacturing an average of about two of these engines per week, and are increasing our facilities very much continually. On unsolicited orders with our present capacity we are kept running night and day, and have been for several months. As we make this engine only, we are enabled to make it well. Investigation will sustain us in making the following claims, viz., that no engine is better made; no engine is as closely governed; no engine is as simple; no engine is as durable; no engine can exceed its economy. Its reputation is thoroughly established where known, and we invite you to become acquainted with us and our engine. As the result of its pure merit, another large company has been formed in Cleveland, Ohio, for the manufacture of this engine, concerning which we give below an abstract, taken from the Cleveland *Herald* of December 6th, 1881. Yours truly, DETROIT CUMMER ENGINE CO., Frontier Iron Works, Detroit, Mich.

"ANOTHER ADDITION to the growing industrial interests of Cleveland. A vast enterprise soon to be established. The Herald chronicles to-day annother addition to the list of Cleveland's industries. Last week the 'Cummer Engine Co.' was incorporated. The gentlemen interested in this new project are Gen'l M. D. Leggett, F. D. Cummer, Geo. W. Stockley, L. L. Leggett, W. W. Leggett, and Frederick Kinsman. F. D. Cummer and W. W. Leggett are residents of Detroit. The remaining parties are residents of Cleveland. The purpose of the Company is to manufacture the Cummer engine, of which the Mr. Cummer referred to is the patentee. This engine has been and still is manufactured exclusively in Detroit.

"It seems the enterprise was hit upon while the Brush company were casting about for an even running engine. The *Cummer Engine was inspected and pronounced the most nearly perfect of any yet produced.* It is an automatic cut off, but a decided improvement upon the Corliss. The previous demand has been mainly from flour mills and other establishments requiring steadiness of motion and economy. In addition to this extended demand, the new company will furnish the engine to many patrons of the Brush Electric Company, some of its proprietors being identified with the latter. The Brush Company do not furnish engines to their patrons, but always prescribe an even-running machine. Purchasers ask the company to reccommend such an engine in a great number of cases.

"The Cummer Engine Company will be able to take advantage of this opportunity to recommend their engine. The Stovering machine shop has been rented, in which men will at once be employed in making special machinery, patterns, tools, etc., for the new works. In the spring the buildings will be erected, covering at first three and a half acres of ground. Three hundred and fifty hands will be employed. This is intended to be the nucleus of a much larger concern. Telegrams were received yesterday asking for stock in this company, a privilege to be courted but not secured. All the work of preparation is to be performed this winter to insure the most rapid progress in the spring.

NOTE.—As the vast product of Brush electric machinery has created a permanent demand for not less than three hundred engines per year, the company has become very familiar with all the defects and advantages of every style of engine made, as in their desire to secure only the best, they have tested by actual use many of each of the best engines, as well as occasional ones claiming merit; and perhaps no company of men are as competent to give an intelligent opinion, concerning the comparative merit of different engines, as the Brush Company, for the reasons given and for the additional reason that they are a body of expert mechanical men. If in need of a new engine, please investigate the merit of the "Cummer Engine" for yourself. ☞*The prices per horse-power are but little if any more than is asked for inferior engines, and where the cost of required boiler capacity is considered, are often cheaper.*

OFFICE OF MORRISON MANUFACTURING CO., ST. JOSEPH, MICH., Dec. 4, '81.

THE CUMMER ENGINE CO., Detroit, Mich.—*Gentlemen:* The 14x30 engine furnished us by you about a year ago has exceeded in its working and economy ever representation made by you for it. Our ledger shows a saving in fuel of a little better than fifty per cent, and owing to our very steady running our production this year is greater than last. We have never stopped on account of the engine, nor has it needed any kind of repairs. The load on our engine is always varying very much, but our motion is so uniform that even with our fast running machinery we notice no change. Yours respectfully, MORRISON MANUFACTURING CO.

MICHIGAN STOVE COMPANY, DETROIT, MICH., March 7th, 1881.

THE CUMMER ENGINE CO., City—*Gentlemen:* We take pleasure in stating that the new engine is giving us great satisfaction, and although we carry a vacuum of 26 to 27 inches in the condenser, it runs perfectly quiet. We find that the instantaneous variation of load, fully fifty per cent, does not affect the motion of the engine to any perceptible degree, and under this wide range of load the change in speed is proven by actual count not to exceed one revolution per minute. The saving in fuel exceeds your representations, and is over 40 per cent, We regard it as a grand success. Yours truly, MICHIGAN STOVE CO., Per G. H. B., Sec'y.

NOTE.—The engine furnished the Michigan Stove Co., was a 20x36 "Cummer Improved."

The following copy of an introductory letter furnished our Mr. Scofield, by the Michigan Stove Co., is sixteen months later than the above.

OFFICE MICHIGAN STOVE CO., DETROIT, July 11th, 1882.

THE KELLY STOVE CO., Columbia Pa.—*Gentlemen:* The bearer of this, Mr. Scofield, calls on you in the interest of the Detroit Cummer Engine Co. We take pleasure in recommending their engine having one in our institution which was put in operation one year ago last February, and a more satisfactory piece of machinery we never had, in fact we think more of it every day, and we think if you are in want of a first-class engine you cannot make a mistake in selecting this engine.

Yours truly, MICHIGAN STOVE CO., Per. G. H. B., Sec'y.

Send to us for full information and prices, also for a list of parties who are using our engine.

DETROIT CUMMER ENGINE CO., Frontier Iron Works,
Cor. Chene and Atwater Sts., Detroit, Mich.